The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXV, No. 11 CHICAGO, ILLINOIS SEPTEMBER 11, 1915

THE SURGICAL ANATOMY OF CLEFT PALATE *

JOSEPH RILUS EASTMAN, M.D.

Professor of Surgery, Indiana University School of Medicine

INDIANAPOLIS

Favorable results in operations for the repair of cleft palate depend much less on the operator's skill and experience than on a clear understanding of certain essential facts of surgical anatomy. Of paramount importance is the conservation of the blood supply to the sutured palate. It is a comparatively easy matter to insure an adequate blood supply to the united margins if the dissection made in the preparation of the flaps is so carried out as to avoid injury to the large palatal vessels.

The blood supply of the hard palate is derived chiefly from the arteriae palatinae major and minor, which are the two divisions of the descending or posterior palatine artery, a branch of the internal maxillary. The larger vessel passes down the posterior palatine canal and emerges from the posterior palatine foramen which is internal to and behind the last molar tooth in the adult and the last premolar in the infant. It runs forward in a groove on the inner side of the alveolar border of the hard palate to the anterior palatine canal, situated near the midline just behind the incisor teeth, where the terminal branch of the artery passes upward to anastomose with the nasopalatine artery. It sends branches to the mucous membrane of the hard palate and the palatine glands. The smaller division of the descending palatine goes to the soft palate.

Fig. 1.—Lateral incisions erroneously placed mediad to the arteria palatina descendens.

The blood of the soft palate comes largely from the smaller division of the posterior or descending palatine and also from the inferior or ascending palatine of the facial artery and ramifications of one division of the ascending pharyngeal, the smallest branch of the external carotid. The former divides near the levator palati and supplies the soft palate and the palatine glands. It anastomoses with the posterior palatine branch of the internal maxillary previously mentioned as the main arterial trunk to the palate. It is in the making of lateral incisions that this large trunk passing between the posterior and anterior palatine foramina, sending its largest branches medialward under the palatine mucosa, is extremely likely to be divided or even split for a considerable distance, for it is in the groove followed by the vessel that the knife blade fits and runs most easily.

After smart hemorrhage due to such an accident the flap on the corresponding side will usually be observed to be quite blanched and ischemic, a state which is clearly a precursor of nonunion.

Blakeway[1] calls attention to two important oscillations of the most important palatal blood vessel, the descending posterior palatine. At its anterior extremity the terminal branch of the posterior or descending palatine turns upward into the anterior palatine canal and on the nasal septum anastomoses with the nasopalatine branch of the sphenopalatine artery. Should the descending palatine artery be divided, this anastomosis would not, as a rule, bring any large amount of blood to the hard palate owing to the small size of the nasopalatine artery. In the posterior canal, the posterior palatine artery gives off accessory palatine branches, which turn backward to anastomose

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Blakeway: Jour. Anat. and Physiol., July, 1914.

with the branches of the ascending palatine from the facial. These posterior anastomosing branches are likewise small. Much confidence, therefore, should not be placed in the ability of these anastomoses to nourish flaps. They are of some value, however, and should be spared, for example, the terminal branch of the descending palatine, at the anterior palatine foramen where it anastomoses with the nasopalatine, should not be carelessly torn in raising flaps from the hard palate.

It is obvious that in making lateral incisions for the elevation of flaps great care should be exercised, as stated by G. V. I. Brown, that such incisions be made as far lateralward as possible in order to avoid injury to the posterior palatine artery. Blakeway advises that the incision be directed outward against the alveolar process rather than upward against the palate, as otherwise the artery may suffer injury or its branches be divided. Likewise in making lateral incisions near the posterior border of the soft palate, for division of the levator palati muscle, it should be remembered that such an incision is quite likely to divide the ascending palatine artery, a vessel of considerable importance in the blood supply of the soft palate.

It may truthfully be said that much less depends on the method of suturing the flaps than on an adequate blood supply. It is most encouraging to observe after the completion of a cleft palate operation that the wound margins are red and not blanched. The free hemorrhage which accompanies the division of the large palatine arteries is nearly always easily controlled by sponge pressure in children, but this may not be the case in adults. In rare cases of severe hemorrhage from the palatine arteries it has been necessary to plug the palatine foramina with wooden pegs. I know of only one reported case of this kind. Doubtless, there have been many in which severe hemorrhage contributed in some measure to a fatality.

Avoidance of injury to the palatine vessels and the consequent hemostasis are obviously of value in keeping the field clear for accurate work. The swallowing of blood during a cleft palate operation often causes fever in an infant, this being either due to the direct absorption of the pyrogenous constituents of the blood or to the fermentation of other intestinal contents owing to the presence of blood.

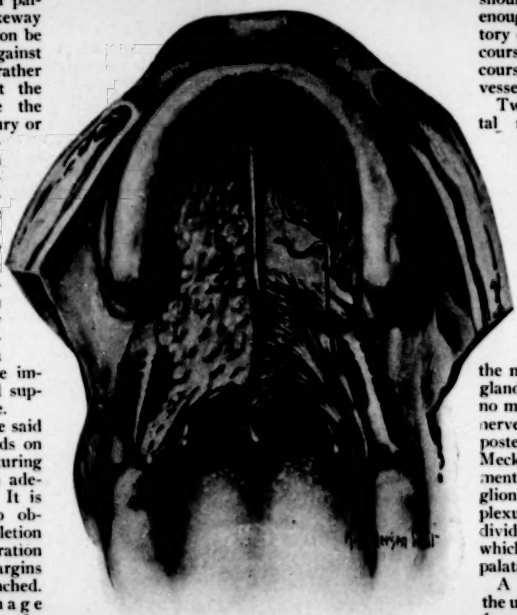


Fig. 2.—Severing of both divisions of arteria palatina descendens by lateral incisions too far mediad from the alveolar process.

All of the well-known evil effects of hemorrhage may be circumvented with considerable certainty, as Brophy says, by the simple expedient of avoiding lateral incisions, or if such incisions are absolutely necessary, making them after the flaps have been elevated and the lines of tension determined, so that only small incisions properly placed are required. It is then usually comparatively easy to relieve tension by placing the tiny incisions either lateralward or medialward to the descending palatine or at a safe distance in front of the ascending palatine. If in a case of very high arch of the hard palate with narrow cleft it should seem advisable to elevate the hard palatal flaps through a lateral incision, such a lateral incision should be just large enough to admit the raspatory or knife blade, and of course, in making it the course of the principal vessels cannot be ignored.

Two of the larger palatal nerves, the anterior palatine and the middle palatine nerve from Meckel's ganglion, correspond in their course and distribution to the two divisions of the descending palatine artery and would be endangered by any incision which would divide the vessels. These nerves supply the mucous membrane and glands of the palate but no muscles. The muscular nerve branches, that is, the posterior palatine from Meckel's ganglion and filaments from the otic ganglion and the pharyngeal plexus would of course be divided by a lateral incision which would divide the palatal muscles.

A further objection to the use of lateral incisions is found in the circumstance that if a flap attached only by its anterior and posterior extremities becomes strangulated as by encircling tape, or sloughs for any reason, a large amount of palatal tissue is irrevocably lost, and repair by a second operation is difficult or impossible. If lateral incisions are not used in the Langenbeck operation and there be failure of union, the second operation is beset with no unusual difficulties.

To elevate flaps by beginning at the borders of the cleft is, as a rule, not so difficult as to raise the flaps through a lateral incision. A convenient practice is to grasp the divided half of the uvula with tenaculum forceps and split the border of the cleft in the soft palate lengthwise but slightly on the nasal side of the margin. This split should be extended at once up to the posterior border of the hard palate. With

scissors-spreading dissection, keeping in the gland tissue between the oral mucosa and the palatal muscles, all of the soft palatal tissue may be rendered movable except the aponeurotic attachment of the tensor palati at the border of the hard palate. The aponeurosis and the attached nasal mucosa must be divided with the curved scissors close to the border of the hard palate, the division extending outward and backward if necessary, almost to the posterior palatine foramen.

The anterior part of the soft palate next to the hard palate for a distance backward of 8 or 10 mm. contains practically no muscular fibers, being composed almost entirely of palatine aponeurosis, therefore this portion of the palate is quite fixed and must be detached in order that the corresponding side of the soft palate may be moved toward the median line. It is remarkable how this simple step enables one to close without lateral incisions and without tension, even the very widest defects. Tillmanns[2] emphasized the importance of this detachment of the soft palate from the edge of the palate bones, and James Berry considers this step one of the most important in the whole operation.

In thus dividing the palatine aponeurosis close to the hard palate margin, no muscle fibers are divided, no blood vessels and no nerves of importance are severed and it becomes possible to draw medialward the soft palate in almost its entire thickness. The oral mucous membrane of the soft palate is of course continuous with the soft tissues covering the hard palate. Therefore, after detachment of the aponeurotic layer at the posterior border of the palate bones, it is comparatively easy to continue the separation of the oral mucous membrane of the soft palate forward over the hard palate by the use of an appropriate raspatory or periosteal elevator. One may begin by first elevating the mucoperiosteum from the hard palate and then dividing the aponeurotic attachment of the hard and soft palates by passing one scissors blade under the mucoperiosteum and the other in the nasopharynx, and by closing the scissors, cut the aponeurosis and the nasal mucosa. But since the raising of the mucoperiosteum from the hard palate is rather difficult in some cases, it seems to me that this may be facilitated by first splitting the edge of the soft palate near the edge of the palate bones, then dividing the aponeurosis and then continuing the loosening of the flap through the split soft palate over on the hard palate following a continuous plane of cleavage. I have never observed a case in which it was necessary to divide the tensor palati at the hamular process; however, if in any case it should be deemed necessary to make such tenotomy of the tensor palati at the hamular process, it would, I believe, be prudent to begin the tenotomy on the posterior border of the tendon just internal to the process, which may easily be felt behind and internal to the last molar tooth, cutting forward cautiously in order to avoid injury to the descending palatine artery at the posterior palatine foramen which is just in front of the hamular process.

Fig. 3.—Palatal blood supply of full term fetus (after Blakeway).

The paring of the edges of the cleft after division of the palatal aponeurosis and the relaxation of the soft palatal tissues at each side may be accomplished by traction on one half of the divided uvula and cutting off with curved scissors the rounded border of mucous membrane which might interfere with union. Drawing the half uvula taut with tenaculum forceps and rolling the relaxed border of the cleft toward the oral side, one may readily inspect its entire length, and with curved scissors cutting forward from the uvular end so freshen the mucosa which may tend to turn around to the nasal side, that no mucous membrane can interpose between the united margins.

The posterior part of the soft palate contains muscle fibers in abundance and is freely movable, being the portion on which most of the palatine muscles act. These include the palatoglossus, the palatopharyngeus, and the levator palati. The last muscle, according to Blakeway, must have nearly if not quite as much action as a tensor as a levator of the palate. Owing to the presence of these muscles, sutures at the posterior part of the soft palate must be secure enough to protect against the traction incident to swallowing. Here the coaptation sutures may with some advantage be reinforced by a relaxation suture along the free edge of the anterior palatine arch, that is, the posterior border of the soft palate. Such tension or immobilizing suture is introduced by passing a small curved

2. Tillmanns: Lehrbuch der Chirurgie, Georg Thieme, Leipzig, 1897.

needle bearing a long linen or hemp thread through the edge of the anterior palatine arch on one side near its base, that is, near the side of the tongue. The thread is drawn through to its middle and secured with a reef knot, leaving the tail of the suture long. At a distance of 3 or 4 mm. from the first or outermost knot, the needle is again passed through the edge of the arch; the tail of the suture is taken up and another reef knot is tied. This process is continued around the anterior palatine arch to its base on its opposite side, the suture crossing in front of the base of the uvula.

In closing narrow clefts of the soft palate, additional security is provided by uniting the two split margins of the cleft as suggested by Ochsner. The sutures approximating the nasal mucosa will probably include in their grasp more of muscle tissue than those on the oral side and are of value as tension sutures. If, in simple median suture, when the edges of the cleft of the soft palate are split the splitting is done slightly on the nasal side, one can gain a few millimeters of additional width for the flaps, and this is especially appreciated by those who use mattress sutures for the closure. The mattress sutures as suggested by Sherman of San Francisco for this purpose, bring together a broad surface for coaptation and prevent any inrolling or interposition of the mucous membrane. It is probably an error to use too many sutures of any kind. If the flaps are not under tension, no more than four or five are needed and the introduction of more may lacerate and strangulate the wound edges in a harmful way.

331 North Delaware Street.

Fig. 4.—Proximity of tendon of musculus tensor palati (passing over rod at the right) to posterior palatine foramen immediately ventrad to it (after Blakeway). Cutting the tendon of the tensor palati at the hamular process endangers the arteria palatina descendens at the foramen.

ABSTRACT OF DISCUSSION

DR. HARRY M. SHERMAN, San Francisco: We grant at once the value of an adequate blood supply to insure satisfactory healing. Dr. Eastman's demonstration of the blood supply in the palate, and the method of preserving it is admirable, but the thing which puzzles me is how I have succeeded in not having any sloughing after the operations which I have done, for I have never had sloughing of any kind due to interference with the circulation, and I have cut off the descending palatine artery in not a few cases on both sides. To be sure I try to keep outside of the artery in making the lateral incisions, but I lift up that whole flap well forward and back, and frequently then injure the vessel, and yet the ascending palatine coming up from the

Fig. 5.—Division of aponeurosis and nasal mucosa at posterior border of hard palate injures no muscles. Arrow point indicates space between muscles of soft palate and palate bone.

Fig. 6.—Splitting the edge of the soft palate on the oral side of the aponeurosis near the posterior border of the hard palate.

pharynx and anastomosing with the palatine branch in front has been ample for the nourishing of the flap. The interference with healing which I have encountered comes from infection of the wound or from tension. I can usually get primary healing in the mouth if there are no teeth. Therefore I try to do this operation on children so young that not even any of the deciduous teeth have appeared on the surface. The next thing is muscular action and the

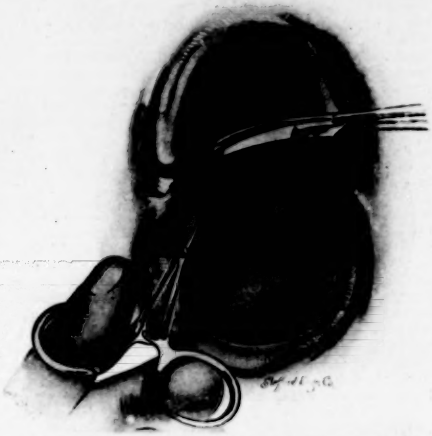


Fig. 7.—Division of aponeurosis and mucous membrane of nasal surface of soft palate at posterior border of palate bones—the most important step in mobilizing flaps.

resultant tension on the sutures by the tensor palati muscles. It is impossible so to place the sutures as to paralyze those muscles during the healing of the part. Brophy's lead palates have never succeeded in doing this in my patients; but by preventing these children from doing any more swallowing than is necessary, I have minimized the work done by the palate and tongue. These children are fed by catheter through the nose, and if possible taught to submit to that before operation; but even in those instances in which there is no time for the training of the children before operation, it takes a very short time while the sutures are fresh and hold well to teach the children the method afterward. To further fortify the suture line, I like to put in releasing sutures running all the way across and taking up a little tension on either side well over toward the releasing incision, and in any case in which there are teeth and when I am certain there is infection, so that my stitches will become infected even if it does not lead to suppuration, I put around both of these flaps a broad piece of tape saturated with paraffin or bone wax, which will prevent the tape from sucking up the juices of the mouth. This I stitch at the back and in front, so it cannot slip, and I hold the parts together in spite of muscular action, and never have these infants had any catastrophe because of the interference with the blood supply.

DR. CHARLES D. LOCKWOOD, Pasadena, Calif.: I have had a great deal of experience in operations for cleft palate and agree with Dr. Sherman. I have experienced but one case out of fifty in which I have had sloughing. I believe the reason is because I use the blunt dissector—any dissector that will not lacerate or injure the vessels. I believe these vessels are lifted up. I dissect off a whole flap of mucoperiosteum from in front clear back by making a short incision and introducing a blunt dissector, lifting up the flap, and I do not injure the vessels. I wish to say that the pictures of Dr. Eastman are the best, and more nearly correspond with the actual conditions presented in these cases, than any I have heretofore seen. One important factor in the success of cleft palate operations is the time of operation. If you let these children go to 1 year or 14 or 16 months the flaps will drop down and approximate, and I believe the two things that cause sloughing are tension and improper approximation. I have had the best possible results with the lead plates advocated by Dr. Brophy, and, combined with horse hair and silver wire sutures, they are most important factors in good results. I have reoperated in a number of cases in which I have taken the smallest strip of mucoperiosteum, made flaps and obtained beautiful results. Where the blood supply comes from I do not know; either from the small blood supply that is attached to the undivided portion of the flap, or in the blood supply of the opposite side; but perfectly beautiful results in healthy children may be obtained by the use of flaps as recommended by Lane.

DR. CHARLES H. PECK, New York: One or two points impressed me: Dr. Eastman mentioned the separation of the aponeurosis of the tensor palati from the hard palate and said that unless this is done it is impossible to get approximation. Division of the lateral pharyngeal plates of mucous membrane, or that which comes down from the eustachian tube can be snipped without dividing the muscle and teased apart so that after dividing the aponeurosis it will allow the drop of the flaps and approximation without tension. This is an extremely important point in these cases. I have always used a short lateral incision. Using blunt dissector work together with the short lateral incision,

Fig. 8.—Elevating flap from hard palate by extending forward the split in soft palate.

placing it far out against the alveolar border and trying to avoid the ascending palatine artery, in my experience never results in sloughing. It might, however, if such prolonged lateral incisions were used as Dr. Eastman used in the last illustration.

DR. GEORGE V. I. BROWN, Milwaukee, Wis.: Dr. Eastman has given us the right foundation for discussion of the subject of cleft palate. With his illustrations before us, the anatomic conditions met with in dealing with cleft palate are readily understood. But it must be remembered that his

drawings represent practically normal circulatory conditions, whereas in complete cleft palate cases the fissures extend through both hard and soft palates and, if single, are usually deflected to the right or left of the median line and pass through the alveolar structures. In the so-called double cleft palates the premaxilla projects forward and is separated from the lateral segments of the upper jaw as the fissure bifurcates anteriorly. Therefore direct anastomosis of the vessels from the anterior and posterior palatine foramina is exceedingly doubtful. Fortunately for us, nature in her effort to support these parts appears to give an unusual supplementary blood supply; at least I like to think so when operating. The question as to the advisability of lateral incisions in palatal flap operations is after all a simple surgical problem. If there be sufficient tissue to permit accurate approximation when periosteal flaps are formed, then there will be no need of lateral incisions. When this cannot be accomplished without tension, lateral incisions

Fig. 9.—Paring edge of cleft with curved scissors. Grasping forceps at uvular half, render margin taut and roll it toward oral side.

must be made to give the necessary relief; otherwise the parts will slough or pull apart.

From my experience with many hundreds of these cases I have learned that the real test of the operative result usually comes some days after operation. These parts are wonderful in their ability to resist infection if treated with reasonable surgical care, but when the mucoperiosteal tissues have been lowered from the sloping sides of the palate walls and brought together in the central line there is necessarily a space between the bone and periosteal surfaces. If the flap borders unite promptly with sufficient strength and blood supply so that when the parts draw back again to be reunited to the denuded bone surfaces the tissue granulation through the central line can keep pace with it, then the result will be complete union; otherwise a partial or complete failure will result.

Dr. Joseph Rilus Eastman, Indianapolis: We would benefit greatly if all operators would give us complete, truthful reports about cleft palate end-results. It is amazing how difficult it is to get reliable statistics as to the final results, relating especially to phonation. It has leaked out here that several gentlemen have done the Langenbeck operation in the same case several times. It may be stated as a fact that the most skilful palate surgeons in the world not infrequently do more than one operation on a single cleft palate. Many surgeons do them over and over again without satisfactory results. Technic in this field may, I think, still be studied with profit.

The difference between omitting lateral incisions and making them is the difference between pleasure and pain. If you make them liberally and cut muscles and blood vessels it will be your painful experience to see, in not a few instances, failure of union because of inadequate blood supply. There may be no infection, still the ischemic wound margins fall apart. If you omit the lateral incision it will be your pleasure as a rule to observe after you have finished the operation a mucosa red and viable. However, because it was said that lateral incisions are to be avoided when possible or to be made as small as possible, that does not imply that they are to be entirely abandoned. One does not often need to make a big incision. A small incision made in a line of tension is often of great service; then, too, a large lateral flap may be raised through an incision only big enough to admit the narrow knife blade, the separation being accomplished by moving the blade pendulum-like, the point traversing a wide arc. As to the possibility of bringing the lateral flaps together, Mr. James Berry has said he would be grateful to any one who would bring him a case of cleft palate that could not be so corrected. It is well to recall our elementary principles of histology and physiology. Do not we want all the blood available in any plastic flap anywhere? Before I began to avoid long lateral incisions and injury to arteries I felt very much discouraged about my cleft palate surgery, but since I have learned to conserve the blood supply, my results are improved to such a degree that I can undertake such work with pleasure and confidence.

INTESTINAL ADHESIONS

BOWEL PROTECTION *

W. B. BRINSMADE, M.D.
BROOKLYN

It seems to be an accepted fact that intestinal adhesions may occur after any abdominal operation. We recognize bacterial invasion, trauma, blood clot and irritation of the peritoneum as the causes of intestinal adhesions. We are unable to control bacterial invasion due to disease. Modern operative technic is able to prevent the contact invasion of bacteria from stumps and diseased areas to a certain extent. Trauma to the intestines may be minimized by following the best possible technic. We have left, then, irritation to the peritoneal coats of the intestine, which so often accompanies operation, as the element of danger which should be eliminated. The prevention of injury to normal organs lying adjacent to the field of operation is the phase of the subject which I desire to bring before you.

EFFECTS

Intestinal adhesions may or may not cause serious symptoms. It is not always possible to draw positive conclusions from a fluoroscopic examination or from a roentgenogram of the intestines loaded with bismuth. What appears in the pictures as a mass of dense adhesions may not have caused very definite symptoms. The gallbladder and stomach may be adherent

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

and give practically no distress in one case, while a similar condition may bring about chronic invalidism in another case. In many instances the small intestines have been found to be bound together and still functioning fairly well. So, too, we have incidentally recognized some cases of angulation of the sigmoid which have caused no symptoms. Therefore, as a general statement, we may say that intestinal adhesions are not of themselves necessarily productive of harm, at the same time acknowledging that very slight adhesions may lead to a condition of marked invalidism and danger. Certain individuals seem to create adhesions in the abdomen more readily than others.

PREVENTION

Admitting the frequency of intestinal adhesions after laparotomy, and recognizing that adhesions between the omentum and abdominal peritoneum follow many incisions through the abdominal wall, and that operations on all hollow viscera are followed by localized peritonitis, I was led to the consideration of methods of prevention and the question of protection to the intestines not in immediate contact with the site of operation.

It is interesting to note the diversity of methods employed by various operators. During a trip in Germany in the summer of 1912 I remarked that no moist pads or gauze were used. Everything was dry. Several surgeons were seen to use ten strips of gauze a yard wide. One surgeon would have the bowel packed off. Another, while he had one pack in the abdomen, left the bowel uncovered, not shielded from touch. In one instance the bowels were unprotected in a case of hysterectomy for cancer. In general, however, the incline of the table was so great that less packing off of the bowels was needed than is the custom with us. One operator I remember seeing, this time not a German, who became so enamored of the packing process that he used 25 yards of gauze before he finished his operation.

I have been convinced for a long time that pads of gauze left in contact with the omentum or peritoneum for any period of time might lead to adhesions, and such a theory was strengthened by the following observations. Four years ago I operated on a young woman suffering from acute appendicitis. The intestines were greatly distended and she took the anesthetic badly. Two moist gauze sponges were placed about the ileum and coils of the small intestine to hold them within the abdomen. The convalescence was normal, but was followed by increasing constipation with pain over the site of operation, which terminated a year later in an acute obstruction, with gangrene of the ileum necessitating resection. The patient finally recovered. About the same time I saw in consultation a young man who had been operated on five days previously for appendicitis. He had had several attacks and the operation was performed in the interval, a sound appendix being removed. Several gauze pads had been placed in the abdomen to facilitate operation. The lad was suffering from acute obstruction. The second operation disclosed the ileum firmly attached to the caput and colon for a distance of 3 inches corresponding to the area which had been in contact with the gauze pads. The third patient traced her illness to a period following an abdominal operation for retroversion. Pain and gastric symptoms developed one month after the operation and she had been invalided for a year. The roentgenogram showed an hour-glass stomach which at operation was found to be fixed and drawn down with the transverse colon by a tense omentum. Freeing the omentum from its broad attachments, well down, relieved the deformity in the stomach and the patient was cured of her symptoms. Inquiry developed that the first operation was performed with the patient flat on her back. The omentum had been pulled down around and covering the intestines and then wrapped around with several gauze pads which were in contact with the intestines and omentum about twenty-five minutes. It seems fair to hold the gauze pads responsible for the complications in these three illustrative cases, even admitting the possibility of local infection and biochemical changes.

Fig. 1.—Intestinal anastomosis showing adhesions due to gauze sponges. This and the following illustrations show dog suspended by hind legs.

With these cases in mind we have eliminated the use of laparotomy sponges as much as possible, never placing them in actual contact with the bowel. One or two large sheets of gum rubber are used next the intestine and the gauze pads placed on the rubber. The rubber slips out of place easily and is a nuisance to the operator but the protection afforded overbalances the disadvantages. To determine the value of this procedure several dogs were operated on, under ether anesthesia, with the same technic that was used on our patients. Moist gauze sponges or sheets of gum rubber were used. All the dogs recovered promptly. They received water the first day and were fed regu-

larly thereafter. A thick covering of collodion protected the external wounds, all of which healed kindly.

Dog 1: Splenectomy and enterotomy. The abdomen was open for one hour and five minutes. Three sponges were in the abdomen at one time. The spleen was removed, the mesentery being ligated in two sections. A wound was made in the intestine near the junction at the ileocecal valve, and repaired with linen Lembert sutures. The laparotomy sponges were in the abdomen thirty-five minutes. The omentum was brought down and spread around the abdomen and the wound closed in layers. Necropsy was performed on the ninth day. The abdominal wound had healed and no sign of peritonitis was present. The omentum was adherent to the parietal peritoneum and to the intestines over the entire abdomen. The site of splenectomy was marked by a mass the size of a hazelnut; no adhesions were around the mass. The coils of intestines which had been packed off were adherent to the adjacent coils. The site of the enterotomy was covered by dense adhesions plastering the neighboring intestine.

Dog 2: Splenectomy and enterotomy. The abdomen was open forty minutes. No laparotomy sponges were used, a sheet of pure rubber gum being substituted. The operation on the first dog was repeated as nearly as possible in the second dog. The necropsy, performed on the ninth day, revealed the abdominal wound healed; no sign of peritonitis; the omentum free. The site of splenectomy appeared as in Dog 1. There were no adhesions along the coils of intestine. The site of the enterotomy was marked by adhesions to one adjacent coil or intestine which was also attached to the omentum. Both of these dogs had been well and active following the operation.

Fig. 2.—Double ovariotomy and hysterectomy done with rubber dam in place of gauze sponges. No adhesions. Intestines have fallen against diaphragm.

Dog 3: Intestinal anastomosis. Three inches of the small intestine were resected; the ends of the intestine were inverted and covered with continuous linen sutures. A lateral anastomosis was then made. The coils or intestine not concerned in the operation were packed away with gauze pads. The abdomen was open for thirty minutes. Necropsy, performed on the ninth day, showed the abdominal wound healed and no peritonitis. The omentum was firmly adherent to the parietal peritoneum not only at the site of incision but throughout the belly. The coils of small and large intestine were found matted together. Figure 1 shows the animal suspended by the hind legs. The intestines are adherent and do not drop up against the diaphragm, being held in place by adhesions. The omentum is seen adherent to the peritoneal wall. Parts of three ribs have been excised in order to show the liver. In spite of the dense adhesions this dog showed no symptoms after operation. He was running around just like any happy well-fed dog and without interference with his appetite. The bowels had moved regularly.

Dog 4: Hysterectomy; double ovariotomy. The intestines and omentum were packed off from the pelvis with gauze sponges for twenty minutes, isolating the parts to be operated on. Both tubes and ovaries were removed, and supravaginal hysterectomy was performed, care being taken to cover the raw surface with peritoneum. Necropsy on the tenth day showed the wound healed; no peritonitis; omentum adherent to the parietal peritoneum throughout the abdomen; strong adhesions between sigmoid and stump of uterus. Two coils of intestine in the neighborhood of the cecum were found bound together by adhesions covering an area of three-fourths inch Fig. 2). There were no other adhesions.

Dog 5: Hysterectomy; double ovariotomy. The operation on Dog 4 was repeated on Dog 5 except that a sheet of gum rubber was used to isolate the intestine instead of gauze pads. The time of operation was the same, twenty minutes. Necropsy on the tenth day found the wound healed; no peritonitis, omentum adherent to the parietal peritoneum only at the suture line; no other adhesions except at one point where a catgut suture remained unabsorbed in the stump of the uterus. This dog was suspended by the hind legs when photographed and the intestines fell into the upper abdomen, being perfectly free to move into the position governed by gravity (Fig. 3).

Dog 6: Gastrotomy. Incision 2 inches along the anterior wall of the stomach. Gauze sponges were placed to isolate the field of operation. The wound in the stomach was closed with catgut suture. Necropsy on the seventh day revealed adhesions of the omentum to the line of abdominal incision and a spread of omentum plastered to the wound in the stomach. A mass of strong adhesions was also present at the junction of the ileum and the caput. The entire colon and sigmoid flexure were loaded with feces, and there was a general injection of the peritoneal coats of the intestine.

Dog 7: The same operation and the same procedure were followed in Dog 7 as in Dog 6 except that a sheet of gum rubber replaced the sponges. Necropsy on the seventh day showed the wound healed; no peritonitis; omentum adherent to line of incision with a small area of wound infection around one of the catgut sutures. The omentum was plastered over the wound in the stomach exactly as in the dog previously operated on. This dog showed at necropsy a decidedly more normal looking abdomen than did the previous one.

At my request the department of surgery of the New York University made experiments on six dogs. All the dogs were eviscerated. In three cases the intestines were protected by gauze sponges and in three cases by rubber dam. The abdomens were open about fifteen minutes. At necropsy adhesions were found in all the dogs, but the report is decidedly in favor of the rubber dam. Evisceration is about as severe a test for this method as one can find.

It would seem fair to conclude from these experiments that, in these dogs at least, sheets of gum rubber did less harm than gauze pads, and to conclude further that if the human peritoneum resembles that of the dog, sheets of gum rubber will do less damage to it than gauze pads. There is nothing original in the use of this material. I first saw it used in the late Dr. Charles Jewett's clinic twelve years ago.

In many instances we have found it possible to avoid putting anything in the way of either gauze or rubber into the abdomen during operation and this I believe to be the best technic of all.

Fig. 3.—Double ovariotomy and hysterectomy showing adhesions due to gauze sponges.

To operate in all cases in which the diagnosis of intestinal adhesions has been made and in which the history points to that graphic picture of intestinal stasis, so well known to us all, will lead to many disappointments. I have seldom been successful in curing the symptoms of patients on whom I have operated for intestinal stasis due to adhesions. There is a class of adhesions, however, which demands operative relief. The adhesions occurring after appendectomy and which give the symptoms of intestinal obstruction, of course demand immediate operation. Whether active peristalsis after operation tends to prevent adhesions or whether stasis of the intestinal tract accomplishes this purpose better, I have not been able to decide. Much has been written on this subject on both sides of the question, ably and forcibly asserted and maintained.

Our greatest success in dealing with adhesions has been with those occurring in the upper abdomen. We have had a number of cases in which the gallbladder and pyloric area were found glued together with adhesions. In three instances this probably was due to cholecystitis occurring at the time of typhoid fever; in other instances it was due to duodenal ulcer. We have followed the plan of separating the organs which were attached and not making a dissection of the rest of the adhesions. In my most successful cases a piece of omentum or omental fat has been grafted between the organs. The cases in which extraneous substances were used as protection to the traumatized intestines were in general not successful. Aristol powder, because of its sticking quality, appeals to me more than any other substance.

Since writing this paper Dr. W. H. Barber has, at my request, carried on further operations at the New York University. He has experimented on six dogs in pairs, doing the operations of splenectomy, gastro-enterostomy and nephrectomy and reports as follows:

The results of intra-abdominal operations and using gauze or rubber dam have not in our hands been as conclusive as in the first series. Indeed it is surprising that no adhesions were found any where in any dog excepting at the posterior abdominal wound or at the site of intra-abdominal operation.

In conclusion, then, I would say that dry sponges do more harm than moist sponges, and that the rubber dam does less harm than moist sponges, and that least damage of all is done to the intestines if packing can be avoided entirely.

117 Montague Street.

ABSTRACT OF DISCUSSION

DR. A. S. LOBINGIER, Los Angeles: The speaker has told us intestinal adhesions may exist for a long time without the patient having any serious embarrassment. A certain number of adhesions will result after nearly every operation. These usually disappear in the course of two or three years. There are important points in the refinement of technic and in the method and system by which we proceed with an abdominal operation which seem to me should always be kept in mind. Intensifying the anesthesia as we open the abdomen and decreasing it after we have everything settled and the field exposed are of prime importance in abdominal operations. We must allow the anesthetist to help us in reducing the trauma. The surgeon should plan his operation with such system and method as to know what he is going to do and do it quickly and deftly and avoid unnecessary handling

of viscera. There are some cases in which the omentum is more involved and a larger serous surface is exposed than in others. Where we have to expose extensive surfaces of endothelium and it becomes necessary to put back large coils of intestine as in hysterectomy, it becomes a very much greater problem than in a simple appendicitis how we shall protect the endothelium and prevent adhesions. Since there has been a great reduction in neisserian infections, since we know how better to manage all pelvic, gastric and colonic infections, we may expect a decidedly decreasing number of adhesions in the abdomen. A number of months ago I wrote a letter to some twenty prominent American surgeons who had large clinics, as to what their experience had been in the use of iodin in the preparation of the skin and its effect in producing adhesions in the abdomen, brain and large joints. Practically all of them answered. A New York surgeon of large experience had abandoned its use because he thought three deaths in their clinic could be directly traced to adhesions resulting from its use. A representative surgeon in the West considered it a very effective and searching germicide which probably became a neutral iodid in its reaction with the blood. A majority of the surgeons favored its use, but all urged careful towelling off of the skin surface from the endothelial field. Several years ago in a visit including the principal clinics in Canada and the Eastern United States, I was astounded to see iodin used in almost every clinic I visited. It was used freely, with apparently little thought of the danger to the endothelium of the joints and intestines. I should like to emphasize the point Dr. Brinsmade has made that we should avoid needless trauma and antiseptics of any kind; but where we cannot avoid a certain amount of handling, in so far as possible we should minimize the trauma by handling viscera with fragile endothelial covering just as delicately and as little as is consistent with honest and thorough work.

Dr. A. F. Jonas, Omaha: Peritoneal surfaces, visceral and parietal become adhered to one another with surprising rapidity and in varying degrees of firmness. The adhesions may be limited to single points or be universal, involving apparently all intestinal surfaces. They may be of a most disabling character, threatening life in the face of apparently moderate adhesions, and again they may be universal and yet intestinal functions may appear to be retarded to a very limited degree. We may be no more amazed at the most extensive and rapid intestinal and visceral agglutinations than at the rapid disappearance of the same. In the one case, very extensive adhesions may be beneficent, and in the other they may be fatal. The clinical manifestations bear no relation to the extent and degree of the adhesions. We have learned that they might be life saving or life destroying according to the mechanical obstacles.

The most common irritants as they concern us are chemicobacterial and mechanical. The first is usually preoperative and has to do with the primary pathologic process and the second usually depends on the surgical manipulations and is postoperative. Considering postoperative adhesions, assuming that we have aseptic, nonadherent surfaces to deal with, we must plan every abdominal operation so as to insure a minimum amount of handling and pulling on the organ or organs that may be the object of operation. The incision should, as nearly as possible, be immediately over it. It should be ample and, when indicated, the gentlest manual exploratory search for other pathology than the one of our primary attack should be quickly carried out. The surgeon must know his landmarks in order to insure unnecessary meddling and that he may quickly bring to the surface without undue traction the structures that he seeks. He must avoid evisceration. The prolonged exposure to the air of the intestines makes them soggy and soon dulls the peritoneal surfaces, producing one of the factors that we wish to avoid. Too many intra-abdominal pads compress and may contuse the intestinal walls, threatening endothelial injury. The repeated introduction and withdrawal of gauze packs during the intra-abdominal operation traumatizes peritoneal surfaces and visceral walls.

The method of protecting the intra-abdominal pads with large sheets of rubber is undoubtedly of value, and they no doubt produce less irritation than free gauze pads. If they can be so adjusted that they will hold all intestines out of the field of operation they certainly fulfil an important function. The smooth rubber surfaces will undoubtedly cause less peritoneal friction than other sponges. They certainly deserve an extended trial.

Dr. L. S. Pilcher, Brooklyn: How often have we seen apparently an absolute forgetfulness on the part of an operator that it was possible to insult the peritoneum? It has been manipulated and pulled on and subjected to friction as if it was nothing more than a piece of smooth glass. Let us not forget, however, that it is one of the most sensitive of surfaces and that the amount of surface that is presented to us is such that our manipulations may do it most extensive damage. One of the cardinal principles in all surgical work is that to obtain an end the least amount of violence required to attain that end should be used. On the other hand, is it not true that to obtain an important end no amount of violence that is essential to accomplish this end shall be spared? These two principles, therefore, every surgeon must always have in mind. It may be best to use abdominal packs or do without them, but whether we shall do without or use many of them or a moderate amount must depend on the judgment of the individual operator and the particular case in hand. Are adhesions to be avoided? Not always. Often adhesions are that for which we seek and for which we are operating. Adhesions may be temporary and vanishing, due to small superficial endothelial abrasions, or they may be permanent, due to loss of the endothelial layer and exposure of the deeper strata. Added to this are the permanent adhesions due to bacterial invasion, which are the source of many extensive adhesions often encountered. As to the particular suggestion of Dr. Brinsmade to lessen the amount of irritation to which the peritoneum should be subjected when opened, such particular suggestions are not new to us. We have seen the peritoneal surface smeared with unguents and baptized with oils and various membranes spread on, and even powders scattered over the peritoneal surface to prevent adhesions, but as we know now, most certainly to produce adhesions. The use of the rubber sheet suggested by him certainly has the advantage of simplicity but it may add difficulty to the technic. The laboratory experiments which have been presented to us do not seem to be absolutely convincing.

Dr. W. I. Terry, San Francisco: For over two years we have been using Pope's solution of sodium citrate and sodium chlorid and we have been much pleased with the effect of it. We use a hypertonic solution in large quantities which appears to minimize adhesions, with most excellent results, as several relaparotomies have shown.

Dr. John William Draper, New York: I assisted Dr. Barber in doing the work on the last series of dogs mentioned by Dr. Brinsmade, and wish to say that it served to emphasize in our minds very strongly the necessity for using the utmost gentleness, and the protective method described by him was particularly efficacious. We should not lose sight of the fact that there is an important biochemical element in this matter of adhesion formation, and it seems to us, and this Dr. Brinsmade has already said, that the ratio between the fibrolytic element and fibrogenetic element in the individual being operated on is the real, fundamental factor, and this, as yet, we have no means of measuring. This does not detract from the importance of handling the tissues with the greatest gentleness, but rather adds to it.

Prevention.—The prolongation of life by the suppression of preventable disease is of much greater value to the state than the cost of the means employed. To ward off the calamity of disease and to prevent the spread of a pestilence is to increase the sum of human happiness and to elevate the race.—*Illinois State Board of Health.*

ACANTHOSIS NIGRICANS AS AN INDICATION OF INTERNAL MALIGNANCY *

A. J. MARKLEY, M.D.
DENVER

There is probably no clinical picture of cutaneous disease more striking and impressive than that presented by the typical case of acanthosis nigricans. Because of its rarity, however, and the dominant character of its skin symptoms, interest in and knowledge of this disease are practically limited to dermatologists. Yet it possesses certain features which render some acquaintance with it of importance to the general profession, and it is toward these particular features, rather than toward detailed consideration, that attention is here directed.

The disease is characterized by the definitely regional and symmetrical development of varying degrees of pigmentation and of multiple hard and soft papillary growths, the sites of predilection for these changes being the sides and back of the neck, the face, the axillae, the genitocrural region, the backs of the hands, the palms, the mucous membranes of the mouth and the vulva, and at times the orifices of the ears, nose and eyes.

More important, however, than the interest attached to it as a rare and striking disease of the skin, is its very frequent association with some form of internal malignancy. So well established is this association that acanthosis nigricans occurring in an adult is regarded by dermatologists as definitely indicating the presence of an internal malignant process even though it cannot be clinically demonstrated.

Fig. 1. — Papillary excrescences on backs of hands and extensor surfaces of arms in a case of acanthosis nigricans.

Pollitzer, who, coincidently with Janovsky, originally described it, gave a most comprehensive review of the subject before this section six years ago,[1] explaining in detail its significance and the importance of its early recognition. The desirability, however, of keeping before the profession facts of any kind, even those rarely elicited, which will assist in the earlier recognition of malignant disease, seems sufficient justification for again directing attention to the characteristic features of acanthosis nigricans, emphasizing its relation to internal malignancy and recording a typical case.

CLINICAL FEATURES

Two distinct forms of the disease are recognized: the adult or malignant, characterized by some serious internal disorder, particularly malignancy, short duration, intensity, and wide spread of the skin symptoms, which are at times marked by exacerbation and remissions, even to complete disappearance; and the juvenile or benign, characterized by little or no disturbance of the general health, less marked development and spread of the skin symptoms, which after a short time became stationary and persistent.

The mode of onset varies, in some cases intense itching and pigmentation about the neck and face being the first symptom; more commonly the first evidence has been an eruption of common warts over the backs of the hands and the forearms. Further development is usually rapid, involving symmetrically the regions above mentioned. The papillary growths vary within the widest limits, from small hard warts, the size of a split pea, on the back of the hands, to large soft condylomatous masses in the axillae or groins and long filiform projections on the tongue. The palms and soles may be involved in a diffuse horny thickening, causing much limitation of movement and giving the hands a claw-like appearance; the nails show nutritional disturbances and the hair may be similarly affected.

Quite as important as the papillary changes is the pigmentation, which is a most conspicuous feature of the disease, varying from a dirty grayish discoloration through shades of brown to black. It may precede the appearance of papillary overgrowth and affect areas in which the skin is only thickened and presents the appearance known as lichenification. The distribution of the two processes is, however, ultimately the same, except that the mucous membranes are never involved in the hyperpigmentation.

The development of warty and condylomatous masses on the lips, within the cavity of the mouth and along the ciliary borders causes the patient great discomfort and distress and constitutes a most striking feature of the disease; but with the exception of itching, there are no subjective sensations complained of.

The time occupied in the development of such symptoms as above outlined is from a few months to two years, the course usually being terminated by the associated malignant process. The juvenile form, however, as previously stated, may persist indefinitely without untoward results.

In 1909 Pollitzer was able to collect from the literature 52 cases and since that time, about 20 additional cases have been reported, but this certainly does not represent the entire incidence of the disease. Of Pollitzer's list of 52 cases, 35 were of the adult type, the patients being over 20 years of age; in 28 cases, or 80 per cent., the presence of malignant disease could be definitely shown or was highly probable; and the proportion of malignant cases among those reported since that time would tend to make the percentage higher rather than lower. The organs affected have been in their order of frequency, the alimentary tract, the uterus, the breasts and in one instance, recently reported, the lung.[2]

A majority of the cases have occurred in women at that period of life in which malignancy is most prone to develop; that is, between 35 and 50. A typical malignant case, however, has been observed, associated with a malignant uterine neoplasm (deciduoma malignum), in a girl of 19.[3] The appearance

1. Pollitzer, S.: Acanthosis Nigricans a Symptom of a Disorder of the Abdominal Sympathetic, THE JOURNAL A. M. A., Oct. 23, 1909, p. 1369.

2. Petrini de Galatz: Ann. de dermat. et de syph., 1914, No. 6, p. 331.
3. Spietschka: Arch. f. Dermat. u. Syph., 1898, xliv, 247.

of the characteristic features of the disease may precede by some months, or even longer, the development of symptoms referable to the associated internal disorder. Klotz' case[4] is an example in which a sarcoma in the pelvis was not discovered for almost two years after onset of the skin disorder. To this list of the adult malignant form, I wish to add the following.

REPORT OF CASE

Patient.—Mrs. T., aged 54, referred by Dr. J. N. Hall, Jan. 21, 1915. Previous history unimportant, except for indigestion during many years; two years ago sudden pain in stomach and sharp hemorrhage necessitated operation and excision of an ulcer, since that time no digestive disturbance aside from constipation. Has three children, never any pelvic trouble.

Present Illness.—This began eight months ago; first noticed an intense itching over abdomen, next sudden appearance of numerous warts over backs of hands and forearms, soon followed by discoloration about neck and face. Four months ago growths began to appear on tongue and palate; since that time progress has been very rapid.

Examination.—General condition good. Heart, lungs and kidneys apparently normal. Blood pressure 120. The backs of the hands and the extensor surfaces of the arms (Fig. 1) are occupied by innumerable hard papillary excrescences of all sizes up to that of a pea; about the wrists the skin is thickened and fissured and the affected parts are here a dark grayish color. The palms are greatly thickened and almost horny, giving to them a translucent yellowish hue. The axillae are deeply pigmented and there are many soft filiform warts. The sides and back of the neck and the shoulders show pigment changes, ranging from gray to a sooty black, and there are numerous papillary growths over the whole of this region (Fig. 2). The face shows pigmentary changes and few warty growths on the forehead; there is also a growth of coarse white hair. The ciliary borders are granular and there are many large soft papillomas. The auditory canals and the nasal orifices also are surrounded by a rim of small filiform growths. The mucous membrane of the mouth, however, is the site of the most extensive changes. The vermilion borders of the lips are wholly occupied by small and large papillary excrescences; the dorsal surface of the tongue is covered by long filiform projections; the hard palate is completely filled in by a dense condylomatous mass until it is level with the superior teeth, the outer surfaces of the gums above and below are involved and a condylomatous growth protrudes from each interdental space. The inner surfaces of the lips and cheeks are but slightly affected and the fauces and pharynx are entirely spared.

Fig. 2.—Pigment changes and papillary growths over the back of the neck and shoulders.

The genitocrural region is not involved in the papillary overgrowth, but is deeply pigmented. The scalp is dry and scaly and the hair falling rapidly.

With such a clinical picture, a diagnosis of acanthosis nigricans was made, and in view of the history of ulcer of the stomach, a cancer of that region was predicted. A most careful examination by Dr. Hall, however, failed to reveal evidence of any intra-abdominal growth; nevertheless we felt justified in having the abdomen opened, and this was done by Dr. Freeman on January 27. Much to our chagrin, after a most careful search, absolutely nothing was found in the abdomen, except a single gallstone of very unusual shape. For a few weeks following the operation, the patient seemed much better, and hope was entertained that removal of the gallstone would be of benefit, but soon the lymphatic glands below the clavicle on each side began to enlarge, indicating, in our belief, the existence of a malignant process somewhere within the cavity of the chest. A careful roentgenographic examination failed to reveal anything in the chest, but the further progress of the case seems, notwithstanding, to point in that direction. Since glandular involvement has increased, the patient has become more cachectic, and no evidence has developed of difficulty with the stomach, which would certainly have occurred had that organ been the seat of a progressive malignant disease.

THEORIES AS TO ETIOLOGY

A satisfactory explanation of the pathogenesis of acanthosis nigricans cannot be given, although it is generally assumed that it is in some manner dependent on disturbance of the abdominal sympathetic, the "mechaniconervous theory" of Darier. This theory assumes the production in the abdominal cavity of pressure from primary or metastatic malignant neoplasms, and a consequent functional disturbance of the nerve structures in that region. It is difficult to reconcile this theory with the juvenile and other benign cases in which no neoplasm is present; moreover, the great frequency of intra-abdominal neoplasms, accompanied by localized pressure, should more often lead to the development of acanthosis nigricans if such pressure were really the cause of that disease. It is also evident that acanthosis nigricans may be associated with malignant growths elsewhere than in the abdominal cavity, as shown by the case of pulmonary cancer previously referred to and my own case.

Porias, in a recent article,[5] develops the theory that the skin dystrophy is brought about by a derangement of certain internal secretions on the action of which the normal condition of the skin is dependent, the active factor in this derangement being some debilitating condition, the most common of which is cancer. Such a theory is not inconsistent with rapidly accumulating evidence of the relation of disordered internal secretions to the production of various dystrophies, and particularly to pigmentary changes; and would more nearly explain the juvenile and other benign cases. In this connection may be cited the case reported by Juan de Azua[6] of an adult in whom no evidence of malignancy could be discovered but who was much benefited by administration of salvarsan, suggesting that syphilis may therefore be the disturbing factor in some cases.

4. Klotz: Jour. Cutan. Dis., 1913, xxxi, 306.

5. Porias: Wien. klin. Rundschau, 1913, No. 38, p. 671.

6. Azua, Juan de: Abstr., Jour. Cutan. Dis., 1913, xxxi, 966.

Whatever may be the direct cause of the disease, however, there is no doubt of the clinical fact that in a large majority of acquired cases of acanthosis nigricans in adults, there is present, earlier or later, some form of internal malignancy. Most commonly, the growth is within the abdominal cavity and may be amenable to modern methods of treatment, the possibilities of which have been greatly increased by recent advances in Roentgen-ray technic for both diagnostic and therapeutic purposes.

CONCLUSIONS

1. The development of acanthosis nigricans in the adult is an indication of some serious internal disorder, the most frequent of which is cancer.

2. The frequency of this association justifies the assumption of a diagnostic relation between the two conditions.

3. Notwithstanding its rarity, acanthosis nigricans should be promptly recognized, and an effort made to locate and if possible, to remove an associated malignant growth, even though no other evidence of its presence exists.

Metropolitan Building.

ABSTRACT OF DISCUSSION

DR. OLIVER S. ORMSBY, Chicago: In the report of cases which Dr. Markley spoke of, prepared by Dr. Pollitzer, was one of the juvenile type in which I was interested. I saw that patient eight or nine years ago, and this case was classical of the juvenile type. The patient consumed an amount of spirits which was entirely out of proportion to anything I had ever seen in a young person. After a single examination he disappeared. Last year I sent for him to appear at the annual meeting of the American Dermatological Association, and although he preferred not to come he reported himself as well. It is an interesting fact that the type occurring in children is benign, while the adult form is malignant.

Fig. 3.—Extensive changes in mucous membrane of mouth.

Mixed Races.—The words "hybrid" or "mongrel," terms of reproach as usually applied to the human race, relate commonly to the union of widely different peoples. But the question of "race or mongrel" can not be settled by *a priori* assertions as to superiority of pure over mixed races. There is no general law that mongrels are sterile, inert and non-resistant. It is to be determined by a study of the results. Experiments have no pertinency unless best is mated with best, and even then they might prove conclusive only if many times repeated. And no result shown in individuals need be valid as a general law of crossing. It would apply only to the particular types in question. No important information could be expected from the study of the first generation. One would need to know the nature of the recessive characters involved as well as of the dominant ones. The final mendelian disposition of mixed race characters must determine the final answer.—D. S. Jordan in *Pop. Sc. Month.*

ILLUSTRATIONS OF THE HISTORY OF LEPROSY *

DOUGLASS W. MONTGOMERY, M.D.
SAN FRANCISCO

The term "leprosy" is now restricted to a chronic infectious disease caused by Hansen's bacillus, which has a special tendency to involve the skin and the peripheral nerves. This special involvement of the skin and the peripheral nerves produces external symptoms of a coarsely repulsive character, in the main easy of recognition. This is one of the peculiarities that renders leprosy so interesting historically, as even imperfect descriptions by men untrained in clinical observation enable it to be traced back through the ages.

Leprosy, as we now know it, is a well-defined disease with definite and marked symptoms, and a precisely determined cause. This precision, however, is an acquisition of recent years. Previous to the work of Danielssen and the elder Boeck in 1842, the symptomatology of leprosy was not at all fully known. The hazy ideas of the middle ages, and in fact of all previous ages, still persisted. This late clinical study of the disease was a natural historical sequence. Almost all disease, especially that running a chronic course, constituted, up to the end of the eighteenth century, an inextricable jumble. Then began the segregation into groups.

Bichat (1771-1802), by his investigations in pathologic anatomy and in physiology, may be considered the founder of modern medicine. Quickly following him came Laënnec (1781-1826) with his studies in the auscultation of the chest. Ever since, there have not been wanting brilliant men throughout the centers of Western civilization who, by clinical observation, by necropsies and by the shrewd application of the natural sciences, have gone on deepening and broadening our knowledge of life both in health and in disease. At first these observers did not study leprosy, because other material, under their hand, requiring investigation, was abundant, and no leprosy was then present in those cities in which the study of medicine was most active. Students, however, were being continually drilled in the habit of clinical observation and pathologic investigation, and when Danielssen and Boeck, so disciplined, undertook the delineation of a group of lepers in Norway which constituted the chief focus remaining in civilized Europe from the great epidemic of the middle ages, they, in 1842, were enabled to give the disease a well-rounded, satisfactory, scientific standing, as an independent morbid entity.

Shortly after Koch's discovery of the tubercle bacillus (1882), Armauer Hansen discovered the presence of an acid-fast bacillus in the lesions of the above-mentioned group of cases in Norway. This bacillus has been demonstrated as present so constantly and so abundantly in most of the lesions of leprosy that it now constitutes one of the best examples of this kind of parasitism in the tissues.

It is clear that the conceptions of this disease by a well-educated physician of the present day, having at his hand all the correlated knowledge represented by the work of Danielssen and Boeck and their successors, is very different from the hazy ideas previously exist-

* Read before the Section on Dermatology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

ing. Hazy and indefinite as the ideas of the older physicians and laity were, they are none the less interesting both in regard to what was true and what was false or faulty.

THE GREEK AND ARAB CONCEPTION OF THE WORD "ELEPHANTIASIS"

In history, each age has its own way of regarding every question, and leprosy is no exception to this rule. The Greeks had a fine plastic imagination, and the human form and its grace either at rest or in motion interested them mightily, as they there saw the highest expression of beauty. Beauty and ugliness, however, are two aspects of the same subject, and naturally, therefore, the Greeks were interested in leprosy, the most deforming of diseases, and it was quite characteristic of them, as we shall see later, to give it the name "elephantiasis."

ELEPHANTIASIS

The word "elephantiasis" with us at the present day means an overgrowth of the skin and the subjacent connective tissues, principally affecting the lower extremities, and due to inflammatory engorgement and blocking of the lymphatic system. Its dominating clinical idea is pillowlike, gigantic enlargement, usually of one lower limb, making it resemble that of an elephant. This kind of enlargement may be due to a number of different causes. In this country it usually occurs as a consequence of chronic streptococcic infection, that gives rise to repeated attacks of erysipelas. This is generally associated with ulcus cruris but not necessarily so. In some tropical countries, an endemic disease, filaria, causes enormous enlargements of the legs or of the scrotum. Elephantiasic enlargement may also be due to direct blocking of the lymphatic circulation, as by tumors, or by cicatricial bands. For instance, immense enlargement of the pudenda may be occasioned by ulcers and cicatricial contractions, usually syphilitic, in the rectum.[1]

Fig. 1.—Tubercular leprosy in a Chinaman. The disease has caused blindness, and the eyebrows and eyelashes have fallen out. Quite characteristically the hair of the scalp has not been affected.

ELEPHANTIASIS OF THE ARABS

As a consequence of the conquests of Mohammed and his followers, the Arabs grew to be a wealthy and highly cultivated people, and as one of the expressions of this cultivation, became interested in medicine. As they lived in a country in which filaria was prevalent, they saw much of the enormous enlargement of the lower extremities and scrotum due to this infection. These enlargements, together with any others that might occur, they assembled under one name, *da al-fil*, elephant foot. Their conception of elephantiasis included about what we accept under the same term, the only difference being, and it is a great one, that the Arabs grouped all the cases together under their gross external appearances, whereas we classify them as far as possible, under their etiologic heads.

ELEPHANTIASIS OF THE GREEKS

The Greek conception of the term "elephantiasis" as applied to leprosy was quite different from that of the Arabs and of ourselves, and took up a phase of leprosy little regarded in modern medicine.

As mentioned before, the infection in leprosy is a peripheral one, and attacks the skin and creeps along the nerves. As it invades the nerves it causes paralyses, sensory disturbances and atrophies in the regions supplied by those nerves. For instance, ulcers, principally of the foot, are a frequent accompaniment of leprosy. Some of these are perforating ulcers due to interference with the trophic nerve supply. Others are from burns or other injuries. Those from burns are particularly frequent, because of the loss of temperature sense, that occurs so early in leprous neuritis. These ulcers often become the seat of streptococcic infection, and consequently there supervene more or less severe attacks of erysipelas, with integumentary thickening and deformity of the foot. In addition to the foregoing, the trophic disturbances of leprosy often involve the deeper structures, and cause shortening of the toes and of the foot owing to absorption of the bones.[2] As the leprous neuritis advances upward, it causes paralysis and shrinking of the great muscles of the calf that move the foot. There consequently is often produced a clumped stumplike foot and a thin leg. The loss of flexibility of the foot and leg causes a rolling heel and toe walk, and the paralyses occasion a loose fling at the knee and hip, which in a measure resembles the trailing gait of an elephant.

The Greeks and Arabs, dwelling in warm countries, and wearing scanty clothing, saw these deformities much more frequently than we of the temperate and colder climates would. In fact, the lepers themselves would attend to the exposure of their own limbs, as almost all lepers are poor, and a poor lame leper would naturally be a beggar, who would expose his deformities in order to excite pity.

It can therefore be readily seen that two conceptions of the word "elephantiasis" arose in neighboring peoples. The one conception, prevalent among the Greeks, referred principally to the deportment, and included leprosy and doubtless many other affections having a clump foot and trailing, awkward gait. It was just such a metaphor as the Greeks with their fine plastic imagination would appreciate. The other conception

1. Tomaszewski: Elephantiasis, Lehrbuch der Haut- und Geschlechtskrankheiten, E. Riecke, 1914, p. 425. Verlag von Gustav Fischer, Jena, Germany.

2. W. Dubreuilh and A. Bargues say that the Greeks gave this disease the name "elephantiasis" because of the stump foot that is so frequently present (La Lepra de la Bible, Lepra, Nov. 1914, p. 14). A German author, whose name just now escapes me, speaks in the same connection of "Der schleppende Gang." Undoubtedly both considerations entered into the conception.

of the term "elephantiasis," prevalent among the Arabs, referred principally to gigantic and deformed overgrowth, and included, among other diseases, the affection that we now know to be occasioned by the *Filaria sanguinis hominis*. It referred to the gross enlargement of the leg, and was appropriate. It had none of the fine perspicacity of the Greeks, but it was just such a metaphor as a people who forbade all plastic art would make. Neither term was precisely defined, but precise definition was not a characteristic of those times.

THE ERA OF THE CRUSADES

At the time of the crusades (1095-1270), and under the influence of religious fervor, any evident bodily affliction, such as lameness, was considered conducive to the soul's salvation; and as spiritual elevation, as contrasted with carnal corruption, was then the serious business of life, one can see what a treasure such a deforming ailment as leprosy became. St. Giles, after whom so many leper houses in England were named, was crippled.[3] His infirmity was due to a wound, not to leprosy, but he did not wish to be cured because of the virtue accruing from the maceration of the flesh, and this illustrates the attitude of the age in regard to such afflictions. The Knights Templar was the most powerful monastic military organization that arose under the influence of the crusades. It became so rich and powerful as to constitute a threat to more than one throne in Europe. It has been said that in order to become a candidate for the Grand Mastership of this organization, it, at one time, was necessary to be a leper.

Fig. 2. — Alligator-leather appearance of the posterior surface of the leg in a leprous Chinaman. Below are seen some white epithelial disks covering lepra tubercles.

If it is desired to obtain an idea of how people thought in the middle ages, apply to Rabelais, the Great Mocker, who lived and wrote when the spirit that animated that period was declining, and the brilliant Renaissance was dawning. He describes a renowned disputation between an Englishman, Thaumaste, and Panurge. This disputation was carried on wholly without words and entirely in the sign language. During its course Panurge drew from a pocket a piece of white ox rib and two sticks, the one black, the other red, which he struck together, making a sound like the lepers of Brittany, but clearer and more harmonious. The physicians and surgeons in the audience thought this sign to indicate that Panurge considered Thaumaste a leper, while the councilors, legists and decretalists interpreted the action to mean that leprosy, as the Lord had formerly held, was a kind of human felicity.[4] This shows that when Rabelais wrote this chapter, forty-six years after the discovery of America, this way of regarding disease as a distinct moral and spiritual advantage still persisted, but was old fashioned, and was a subject for mocking laughter. Under such a favoring attitude of mind as existed at the time of the Crusades, assisted by the general lack of hygiene of a low form of civilization, it is no wonder that leprosy increased mightily in Europe.

ERA OF THE REFORMATION AND OF THE RENAISSANCE

This era is most attractive in regard to leprosy. It was a time when the Bible excited universal interest, and when vast numbers of people accepted what was written in it with unquestioning faith. By a curious combination of circumstances, it became the principal political document in one of the bitterest political fights ever experienced, which culminated in the Thirty Years' War. During all this time and for long afterward, the Bible was studied with a fanatical bias that we can hardly appreciate. Because of the mistake in the translation of a word in it, and a further mistake in applying Biblical precepts to the chronic infectious disease of which we are speaking, leprosy came to be regarded as a highly infectious malady. In order to understand just what happened, it is necessary to hark back to a time when the Jews lived under a theocratic government, and so to ascertain the true meaning of the Hebrew word *Zaarath*, that was translated by the Alexandrian Jews as the Greek word lepra.

THE HEBREW WORD "ZAARATH"

Under Moses and his followers, the Hebrew theocracy ruled the people as only a theocracy can. Under this curious government, a tribesman could be arbitrarily called before a priestly tribunal to undergo an examination as to whether he was Zaarath, or as McEwen has translated it, "taboo."[5] This tribunal was uncontrolled, it passed on the evidence and issued the sentence, and if the defendant was declared taboo, he had no recourse but to submit. Under such circumstances, the evidence was sought in minute trivial appearances on the skin, the presence of which was largely a matter for the observers to decide, and had no relationship whatever to any definite disease process. As Unna has pointed out,[6] Zaarath had a theological, not a medical meaning, and it is time wasted to try to define the word as appertaining to any one disease or group of diseases. Zaarath remained, as it was intended it should, a vague, indefinite something, usually connected with an assumed external bodily defect, the possession of which entailed the banishment of the afflicted person from the community. An appreciation of the utter hopelessness and abandonment of such exile can only be acquired on realizing that in uncivilized life everything outside of the community is strange and inimical.

This word, Zaarath, naturally was embodied in the Jewish religious writings.

On the founding of Alexandria, many Jews settled in that city, and they took with them their religious writings. As time passed, Greek became their everyday language, and the religious writings were translated into that tongue, forming the Septuagint

3. Fletcher, W. G. D.: The Lepers of Shrewesbury, Without the Camp, January, 1912; abstr., Lepra, June, 1912, p. 222.
4. Pantagruel, Bk. ii, Ch. xviii.
5. McEwen, E. L.: The Leprosy of the Bible; Its Religious Aspect, Biblical World, October, 1911.
6. Unna, P. G.: Ein typisher Fall von Papierwissenschaft, Lepra, February, 1913.

translation of the Old Testament.[7] In this the Hebrew word Zaarath was rendered into the Greek word lepra, meaning literally a scale, and no doubt having a signification as wide and loose as the English expression "dry tetter." It principally included psoriasis, and indeed into the last quarter of the eighteenth century lepra was one of the synonyms of psoriasis. Later the writings called the Septuagint, together with others of Jewish origin, formed the collection called the Bible, that still later assumed a world importance as the principal book appertaining to Christianity, and incidentally, as before mentioned, these writings had a great influence on the European attitude toward leprosy. It was the Septuagint that formed the basis of part of the Latin Vulgate, just as the latter formed the medium for the rendering of the Scriptures into the various European languages. In all of these, the word lepra was carried along.

During the first centuries of the Christian era the influence of these writings must not have been nearly so great as they afterwards became, because only the learned, and they were few, could read them. The spiritual life of the Church was carried on by tradition, and by those few who could read, so that the translation of the Israelitish word Zaarath, taboo, into the Greek word lepra, dry tetter, must not then have done much harm. Its day was approaching, but it was not yet.

The Arab civilization has been already mentioned, and the attention paid in it to the study of medicine. The Arabs, however, were not investigators, they were translators and imitators, and they translated the works of the ancient Greek and Latin authors into their own tongue. Constantin of Carthage, who died in 1087, retranslated these works from Arabic into Latin, and instead of employing the word elephantiasis for the Arabic word *djudsam*, which signified the disease we now call leprosy, he chose the word lepra, the very word the translators of the Septuagint had used to translate the Hebrew word Zaarath or taboo. This is, indeed, the first appearance of the word lepra as indicating the disease we now know as leprosy. These translations of Constantin had a great vogue in the middle ages. In fact, the smashup of the Roman Empire had been so thorough that it was through the Arabs alone and largely through this Constantin that the people of Western Europe became acquainted with the Ancient Greek and Latin authors.

Fig. 3.—Ulceration of the sole in leprosy. From a photograph received through the courtesy of Dr. J. S. B. Pratt, President Territorial Board of Health, Honolulu, H. I.

The year of the discovery of America by Columbus, 1492, is now accepted as the year when syphilis was imported into Europe by Columbus' sailors. This date is also accepted as the close of the middle ages. For years previous to this, leprosy had been gradually disappearing from Europe, and its diminution and gradual extinction may be ascribed, at any rate in part, to the erroneous views of the disease drawn from the Bible.

For years before the actual Reformation, the Bible was becoming more and more read, and by a people uncritical in medical matters. It was perfectly natural, therefore, for them to infer that what was said of Zaarath, or as the translation ran, lepra, was said of the hideously ostentatious disease so prevalent in their midst. And besides this, as we have seen, Constantin, in his translations, had designated true leprosy as lepra. The most rigorous segregation, facilitated by the existence of numerous leper houses, and backed by unquestioned scriptural authority, was instituted against what they considered this very contagious disease. This segregation, together with the increased cleanliness incident to an advancing civilization, was so successful that by the time usually set by historians as the beginning of the Reformation (1517), leprosy was well on the way to extinction in central Europe.

THE ATTITUDE TOWARD LEPROSY IN MODERN LIFE

Much of the kindliness and welcome we receive in this world is due to the pleasantness we radiate from our own person. A benevolent or genial face is an asset, and frequently gives a just reflection of the mind within. Two of the most selfish, ruthless persons I have ever met were, however, provided with benevolent features. In the same way a scowling, hard visage may hide a heart of gold. One of the most sad features of leprosy is the distortion and disfigurement of the features. In tubercular leprosy the eyebrows are changed into two irregular, prominent, hairless rolls, the nose is disfigured with nubs, and in the glabella there form nodules separated by deep furrows, the lips are thickened and deformed, and the cheeks are irregularly indurated and discolored. All this gives a threatening, scowling aspect to the deeply sunken eyes. In leprosy of the nerves of the face, the features are twisted out of shape as a result of paralysis and muscular atrophy. Under no circumstances is such a visage pleasant to look upon, and in superstitious communities, imbued with mysticism, such as were the European countries of the middle ages, it is no wonder that the victims of leprosy were regarded with the greatest horror.

The poor lepers have still another unamiable characteristic. They are particularly thankless for any attention shown them, and they are stupidly indifferent to the horror they excite. When a person is disagreeable and unaware of the fact, it impels many of his neighbors to active aggression. I have often thought that this stupid indifference is possibly the result of a toxin, the same one that possibly causes loss of sensibility of the peripheral nerves. These are only a few of the repulsive features of this repulsive disease, and yet, in my experience, suicide is infrequent among them.

Just the attitude the public of today assumes toward leprosy is difficult to determine. Individual tendencies are so varied that it is hard for one in the midst of a movement to get the general drift. It seems, however, to partake of the general altruism toward the unfortunate. On the part of those scientifically

7. This translation was made under Ptolemy Philadelphus, 284-246 B. C., and later, down to 150 B. C.

trained, the disease has excited a lively curiosity as to its nature, and especially as to its mode of transmission. Among the general public there still remains a great fear of the contagiousness of leprosy, evidently issuing from the erroneous interpretation of certain passages of the Old Testament, and the natural repulsion toward the disease. There is an evident desire to get them quickly gone to a remote place with a wish that they may not be overhasty in their return. As a matter of fact, leprosy is very reluctantly contagious, and must require very special favoring circumstances in order for it "to take." A very modest degree of cleanliness hinders its transmission. As soon as a country becomes well to do and adopts the daily tidiness incident to modern civilized life, leprosy dies out. Although, therefore, the Biblical view of the highly contagious nature of leprosy undoubtedly aided in stamping out the epidemic of the middle ages, in modern life it works an unnecessary hardship on the afflicted, and should give place to a more reasonable attitude, agreeing with the real facts in the case.

323 Geary Street.

SYMPTOMS AND DIAGNOSIS OF LEPROSY

WITH REPORT OF CASES *

HOWARD MORROW, M.D.
AND
A. W. LEE, M.D.
SAN FRANCISCO

The compilation of notes in this paper is the result of study of the lepers in the Isolation Hospital of San Francisco, of private cases and of observation of patients in the University of California Hospital. The thirteen cases of leprosy in the Isolation Hospital are all chronic, and most of them show evidences of all stages of the disease.

Leprosy is a chronic infectious disease that is produced by a semiacid-fast micro-organism which, morphologically, somewhat resembles the tubercle bacillus. After invasion into the human body this bacillus effects changes in it which are of apparent diagnostic significance.

Leprosy must be regarded as a systemic disease, and may, at some period of its case history, implicate any or all of the units of the human body. This statement can be verified by a direct or indirect manifestation of the malady. By an indirect manifestation of leprosy we mean that, in consequence of the long-continued loss of bodily resistance, an intercurrent infection is very likely to occur. By a direct manifestation we refer to those instances in which either subjective or objective variations from the normal condition of the body have resulted from the presence of the lepra bacillus in the various organs, as has been proved by laboratory methods of investigation.

As has been stated, while any part of the body may be involved at some epoch in the course of an average leprosy infection, we feel that it is proper to devote most of the detailed division of this paper to those pathologic changes in the integument which may result from it, and particularly are we of this opinion since the great percentage of lepers is recognized by skin lesions. These cutaneous evidences of leprosy can be grouped under more or less definite clinical types, but it is quite possible for one variety to merge into another, or to be simultaneously accompanied by every form of integumentary lepra. Evidences of leprosy that appear in the skin may assume the form of a macular eruption, trophic changes following nerve involvement, areas of pigment increase or decrease, and hypertrophic process located in the corium and superimposed structures.

In macular leprosy the lesions may be few or numerous, the affected areas may be large or small, their periphery is usually round or ovoid, their margins as a rule are sharply defined and sometimes elevated. In the beginning these macules are bright red, soon changing to reddish brown. With chronicity they tend to pale in the center, and, by coalescence of their outlines, to form gyrating figures. The margins of such lesions may have a purplish tinge, suggesting a certain form of erythema multiforme of the skin, and at times deep pigmentation occurs in their outermost limits. When central clearing does take place in the macular eruptions of leprosy it assumes a fawn-like color or that of the infected persons' normal integument. Where leprous macules have appeared there is a local decrease of perspiration, a crapelike irregularity of the skin surface and the presence of scales. So far as changes in sensation are concerned, macular leprosy may be entirely free of them during the first few months of its development, or the affected areas may be hyperesthetic. In the later stages, however, these macules are usually anesthetic. When a long-standing macular eruption of leprosy acutely exacerbates, its color flames into a bright red as in its earliest form.

Pigmentary macules are occasionally observed which have not been preceded by any other leprous eruption. And again, areas of depigmentation appear, which, likewise, develop independently of the foregoing manifestations of the disease.

The macular and pigmented varieties of leprosy cause a very inconsiderable interference with the normal functions of the body, and yet in another phase of the infection the pitiable sufferer becomes totally incapacitated for even the simplest employments, and passes into a condition which is as repugnant as that of the most distorted mummy of Egypt or Peru. At this time the nervous system has been directly attacked, and since the ulnar and peroneal nerves are most frequently involved, the greatest deformity results in the hands and feet. Now and then these nerves are so enlarged that they are easily palpable, and in some cases the small cutaneous nerves are so tumefied that they can not only be felt but actually seen. As these pathologic nerve changes go on, contractions occur in the flexor muscles of the hands until the fingers have become so folded on themselves that the condition is commonly termed "the leper claw." The bones of the fingers and toes may be absorbed, in this stage of leprosy, without ulceration, being the result of a rarefying osteitis. This leads to the formation of the so-called "stump" and produces the clinical condition of lepra mutilans. In this variety of nerve leprosy ulcers may be numerous and large, the eyes may be destroyed, the nasal bones absorbed, and the nostrils closed. Fingers and toes are occasionally amputated in a spontaneous manner at this period of the infection. One of the

* Read before the Section on Dermatology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

rarer manifestations of leprosy associated with the nerve type is the appearance of bullae. These may be seen on any part of the body, but they are generally found on the hands and feet.

Leprosy may announce its presence in other ways from those previously outlined, such as nodular eruptions on the face, limbs and trunk, and clinically this is spoken of as "nodular leprosy." Hoarseness is an early manifestation of the nodular type, due to the presence of lesions in the larynx and pharynx. These submucous nodules have a tendency to ulcerate, but they usually heal during remissions of exacerbations. The lesions can be either large or small, and the face is the part of the body which is as a rule most extensively affected. When the face does show the greater amount of involvement, the nodules are commonly of the large variety; when the body is the site of nodular formations, the smaller type is the usual finding. Every now and then a case will be observed in which the nodules are not located in the skin proper but occupy a subcutaneous position; in such instances it might be almost impossible to catch the lesions between the examining fingers, as they have formed attachments to the underlying tissues. The nodules of the usual type are frequently elastic to the touch, corresponding to that palpable sensation experienced on manual examination of miliary gummas. It is not unusual to see large comedones in nodular leprosy of the face and trunk. Aside from the distinct lesions in nodular leprosy of the face there is a deep wrinkling of the forehead, a broadening of the nose, a thickening of the lips, a tumefaction of the skin of the outer part of the eyebrows, all of which go to contribute to the well-known "leonine expression" of chronic leprosy. The hair of the eyebrows usually falls out, and that of the scalp becomes dry and tends to a premature graying. In cases of well-marked nodular leprosy the lesions are usually grouped, they are reddish brown, but they assume a brighter hue during exacerbations. They become anesthetic quite early. The nodules might disappear in a few months or persist for years, with or without ulceration. When ulceration does occur healing is followed by cicatrization. When absorption of the nodules takes place without ulceration, areas of cicatricial atrophy or deep pigmentation mark the location of the vanished lesions.

With or without the presence of active leprosy, particularly in the later stages, a marked desquamation of the skin may occur and usually on the lower limbs; this might be so excessive as to resemble a case of severe ichthyosis.

The subjective disturbances of leprosy are malaise, migratory neuralgic pains, anorexia and depression of both the mental and physical faculties. General hyperhidrosis occurs at times as well as fever, the latter resembling various forms of malaria. All of these symptoms are exaggerated during an exacerbation. Paresthesia and neuralgic pains are associated with the nerve form.

Leprosy of the eyes is such an important subject that a short description should be given of the usual clinical manifestations. In all types of leprosy the eye is frequently involved and occasionally quite early in the disease.

In the nerve type of leprosy we frequently get excessive lacrimation. This is followed by a marked xerosis causing atrophic shrinking of the mucous membrane and various distortions of the lids. Through paralysis of the lid muscles and inability to close the lids drying of the cornea follows, with exfoliation of the epithelium, deep infiltrates in the parenchyma and involvement of the interior of the globe. Surgical intervention is frequently necessary. In the nodular type of leprosy we find nodules developing in the conjunctiva, in the cornea and in the iris. Iritis is common in the later stages. The deeper nodules in the cornea have a tendency to ulcerate and frequently we find involvement of the entire uveal tract. This ends in shrunken, painful globes which requires enucleation.

DIAGNOSIS

Well-advanced cases of nodular leprosy are easily diagnosed. The characteristic leonine expression can seldom be confused with anything else. On the other hand, however, early stages of nodular leprosy may somewhat resemble syphilis or lupus. Both the large and small forms of nodular leprosy occasionally simulate multiple benign cystic epithelioma and xanthoma tuberosum multiplex.

When only erythematous or pigmentary changes are present a positive diagnosis must be made by the course of the disease and the observation of sensory changes. This is particularly exemplified in the generalized evanescent type which very closely resembles certain manifestations of erythema multiforme. Only careful investigation of the sensory disturbances will be of value in differentiating ringed leprous lesions from other ringlike cutaneous eruptions; this also applies to the hyperpigmentary and depigmentary forms.

The condition known as lepra mutilans must be distinguished from syringomyelia. In the latter disease there is a dissociation of sensation, and other evidences of leprosy are wanting. In doubtful cases, a portion of the involved nerve may be removed for the purpose of demonstrating the presence of the bacilli; this diagnostic measure has frequently proved to be quite unsatisfactory.

In obtaining material in cases of nodular leprosy to serve the demands of laboratory measures of investigation, a nodule may be excised or a portion of it removed with a biopsy punch. The method which has given us the best service is as follows: The nodule is first incised with a cataract knife and through the opening a small curet is passed deep into the affected area. The material thus removed is smeared over the usual glass slide and stained by the customary acid-fast method. Should the bacilli be present in large numbers, further work is unnecessary; but in those instances in which only a few organisms can be found, cultural procedures and animal inoculation may be resorted to in order to distinguish them from the tubercle bacillus.

In the nodular and mixed type of leprosy, even when syphilis is excluded, the Wassermann reaction is frequently positive. It is positive in almost all cases with leprous antigen. In the anesthetic type it is usually negative, and in those cases in which the reaction is positive it is much weaker than in the other forms. In all types of the disease the luetin reaction is negative unless the condition is complicated by syphilis.

REPORT OF CASES

Case 1.—Jim, aged 34, born in Honolulu, has been in the Isolation Hospital for seven years. He is married, his wife is in good health. His three children all died in infancy. His

wife's uncle had leprosy. He came to California from the Hawaiian Islands nine years ago, and at that time had one perforating ulcer on the sole. Nodules developed soon after. He now has an unusually severe type of nodular lepra of the face, body and limbs. No hair appears on the face; the hair on his scalp is thick, dry and prematurely gray. Leprous nodules are on the hard palate. On the body the eruption consists of grouped lenticular papules, a few tuberous growths and some ulcers. The ulcers are most numerous on the hands, where they are the result of burns. There is atrophy of the testes. Atrophy of the limbs is beginning and anesthesia of the limbs is progressing. There are distinct leprous nodules in the left palm and many pigmented spots. Many perforating ulcers are on the feet. The right eye shows infiltration and edema of the temporal side of the ocular conjunctiva with a small patch of whitish infiltration of the contiguous portion of the cornea. There is no involvement of the pupillary area of cornea and the sight is good. The left eye shows similar involvement of the ocular conjunctiva, most marked at the lower temporal border of the limbus. The cornea is clear and sight is good. Wassermann negative with syphilitic antigen and positive with leprous antigen.

CASE 2.—James, a colored man, aged 63, was born in Maryland. He went as cook with the Army to the Philippines and returned to California in 1899. The eruption appeared in 1908 as miliary nodules over his face. Later nodules developed in the eyes. There is still hair on brows and lids. The nodules on the face have been absorbed. His body is clear. The skin on the backs of his hands is shiny, thickened and there is much of the usual tumefaction with some scattered nodules. There is some muscular atrophy, but sensation is still good. The skin of the legs is dry, shiny, scaly and darker than the rest of the body. His right eye was enucleated three years ago to relieve the pain which resulted from the presence of leprous nodules in the cornea. His left eye shows nodular thickening on the center of the upper lid. There is a grayish white ring of opacity surrounding the cornea which is broadest at the superior aspect and is similar to an arcus senilis. Punctate gray opaque spots appear through the center of the cornea. The sclera shows the irregular pigment of the African races. Wassermann negative with syphilitic antigen; positive with leprous antigen.

CASE 3.—Fong Gong, a Chinese, aged 47, shows the nodular type. On the face the nodules are very large and are most numerous on chin, cheeks and brows. He has the saddle nose and leonine expression. The hair on his scalp is normal, but has disappeared from his brows and lids. His ears are enlarged and anesthetic. Many large comedones are in the nodules on the nose and cheeks. His hands show much tumefaction, with the characteristic dark brown skin with a bluish tinge. His palms show the characteristic dryness. There is partial anesthesia of the hands, but muscular atrophy is not marked. The skin of his trunk, particularly of the back, shows a diffuse thickening, with exaggeration of the normal markings and a diffuse confluent macular fawn-colored eruption. Scattered nodules of a deeper brown hue can be seen over the affected area. This condition was much more marked a few years ago and is an excellent example of elephant skin. Anesthetic areas are scattered over the body and some of the nodules are anesthetic. There is a diffuse thickening of the skin of the legs, with dark brownish discoloration and wrinkling, and a nodular eruption on the sole. Complete anesthesia of the feet exists. A perforating ulcer is on the ball of the right big toe. Nodules on the right eyelids are so large as to mechanically hinder their opening. The right eye shows quadrilateral atrophy of the globe. There is applantation of the cornea with numerous grayish cicatrices. Even light perception is gone. The left eye shows grayish white infiltrates of the cornea in various stages of activity. There is photophobia. Partial sight remains.

CASE 4.—Bill, aged 34, a sailor, born in Honolulu of English parents, has been in the Isolation Hospital for three years. The trouble started four years ago as a thickening of the nose and ears. The skin on his face is crapelike and yellowish gray. The normal markings are exaggerated. There is xanthelasma and right facial palsy, with a constant rhythmical contraction of the muscles about the right eye. The lids are normal except for the right palsy. The conjunctiva of the globes is injected. The hair in the brows is greatly diminished. The ears are enlarged and the skin over them is shriveled. Sensation on the face is delayed and decreased. There is also decreased sensation on the forearms and hands, mostly in distribution of the ulnar nerves. Thenar and hypothenar eminences are atrophied. The palms are dry and the normal markings accentuated. The fingers are thickened and clubbed and the skin is shiny. The color here is browner than that of the rest of the body. The skin of the feet is brown and shiny and the soles are deeply pigmented in places. There are no sensory changes. On the forearms and legs are a dozen subcutaneous nodules, rather poorly defined, the skin over them being a bit elevated, and over some there is slight redness. These last a few weeks, disappear, and are then followed by others. These are anesthetic, and leprous bacilli are present in them.

CASE 5.—Dan, aged 30, born in Greece, came to America thirteen years ago and has been in the Isolation Hospital for four years. Symptoms were first noticed in 1910 as lesions in the eyes. Later he had papules on cheeks and thighs, and excision of one of these papules showed numerous acid-fast bacilli. Later he developed muscular atrophy of the hands. He now has lepra nodules sparingly distributed over his face. The hair has fallen from the cheeks and entirely from the brows. Nodules appear on the soft and hard palate. There are a few nodules on the backs of his hands on a skin which is reddish brown, dry, shiny and crapelike. His palms are dry. Atrophy of the thenar and hypothenar eminences exists, but there is still much muscular power and sensation in the hands is still good. The center of the cornea in the right eye is the site of an ectatic scar with many long blood vessels from the surrounding sclera. The anterior chamber is deep. The pupil is irregular from an old iritis. The left eye is similar to the right. He counts fingers with the right eye and light perception with the left. Wassermann was negative with syphilitic antigen and positive with leprous antigen.

CASE 6.—Ah Fong, aged 33, born in Canton, has been at the Isolation Hospital for four years. Dull reddish-brown macules appear on face. These are fading. Areas of dark brown pigmentation are on the thighs; the skin of thighs, legs and feet is scaly and dark brown. Sensation is diminished, especially on the lower limbs.

CASE 7.—Yee Foo, aged 57, has been in the Isolation Hospital for twelve years. For five years before his entrance the patient had an eruption on his face of the nodular type of leprosy. The nodules have been large and numerous on the face, but nearly all have resoluted, leaving a dark brown pigmentation, especially on the cheeks. The hair is still in brows and lids; the ears are normal. No marked change in sensation exists on the face. It is many years since these nodules have shown active signs. The skin on the body is dry, wrinkled, shiny and with little change in color. The palms are dry. There is some contraction of the little fingers and some muscular atrophy. There is also delayed and decreased sensation. These changes in the hands are recent, showing the condition to be active in the nerves and thus producing a mixed type of leprosy. The right eye is negative except for a few old scars. The left eye shows injection of sclera, most marked above and below. A grayish-white infiltrate of the cornea extends 4 mm. from the upper limbus. The lower portion of the cornea shows a few whitish spots of infiltrate. The iris is thickened and discolored; sight is diminished.

CASE 8.—Frank, a Chinese, born in Canton, aged 32, has been in the Isolation Hospital for one and one-half years. The trouble began three years ago with loss of feeling in the hands; then macules appeared on the face. Since that time these have cleared. Some areas of anesthesia are on his face and remains of an indistinct macular eruption appear

on the lower part of his back. These areas are hyperesthetic. A fading erythema is on the thighs and legs. These lesions are indistinct, browner than the normal skin, a bit crapelike and very dry. There is decreased and delayed sensation. The ulnar nerves are enlarged. The fingers are contracted and clubbed; the palms are dry and the thenar eminences are atrophied. The interossei are markedly atrophied. The hands are anesthetic, eyes negative. No lesions appear in his mouth.

CASE 9.—Pedro, aged 40, born in Alcapulco, Mexico, has been in the Isolation Hospital for twenty-five years. Both ocular globes were enucleated three years ago. The right lower lid shows marked ectropion; the upper lid is normal. The conjunctiva of the lids is smooth, dark red and without nodules; the left lids are similar. There is short, sharp, nonrhythmical contraction of the muscles about the mouth, and shriveling of the skin over both cheeks, about the angles of the mouth and of the chin. The patient has claw hands and the muscles are markedly atrophied, but there is very little change in the nails. The legs are atrophied. The skin is scaly and dark reddish brown. The patient has foot-drop from paralysis of the peroneal and tibialis anticus. The toenails are somewhat atrophied.

CASE 10.—Lem Him, aged 50, born near Canton, has been in the Isolation Hospital for eight years. The disease is of the nerve type. His face looks normal, but the skin is almost completely anesthetic. The brows are normal. There are pigmented spots over the trunk. His hands show marked muscular atrophy and the skin is completely anesthetic. Many digits have been absorbed. Three contractured fingers remain on the right hand. All phalanges on the left hand are more or less absorbed. The skin is wrinkled on the back of the hands and somewhat reddened. The ulnar nerves are enlarged. The legs are atrophied and the skin in places is pigmented. The right foot is clubbed. The feet and legs are anesthetic. The testes are atrophied. The right eye shows an arcus senilis and a small pterygium from the nasal side.

CASE 11.—How King, aged 54, born in Canton, has lepra mutilans. As an example of the mummifying type of the lepra, the following case serves as an example. Both eyes are blind from atrophy of globes. The nose is flat from destruction of the cartilaginous and bony structures and partial closure of the nostrils. The skin of the body is brown and wrinkled. The thighs and legs are very dark and scales are large, the condition simulating a severe type of ichthyosis. The hands are badly deformed, the fingers contracted into the palms and wrists flexed. There is very little absorption of the phalanges. The fingernails are atrophied. The toes are contracted and feet are clubbed. Some of the toenails are hypertrophied, some are atrophied and some are absent. This man is helpless, has been confined to his room for many months, and yet seems no nearer death than a year ago.

CASE 12.—P. P., an old railroad employee, aged 40, born in Greece, has been in America for thirteen years and in the Isolation Hospital for seven years. This is an example of mixed leprosy. Large flat pale nodules are scattered over the face, particularly on the forehead. This man is blind. The palpebral apertures on the right side are smaller than on the left. The skin of the lids is thickened and pale and cilia are missing in places. No hair is in the brows. There is a quick, jerky, horizontal nystagmus. The globes show quadrilateral atrophy with applantation of the corneas, which are opaque, and the anterior chambers are abolished. Light perception is present. The skin of the entire body is dry and a bit scaly. There are nodules and resoluted nodules on the forearms as well as scars from old ulcers. The hands show the nerve type of the disease, with atrophy of muscles and contractured little fingers. The hands and forearms are anesthetic and tactile sensation is gone. The nodules on the face are not anesthetic.

CASE 13.—Mike, aged 34, born in Greece, has been in America for six years and in the Isolation Hospital for two and one-half years. He gives a history of fever for a year. Then he noticed an eruption of the nodular type on his forehead. Large, bright red nodules are on the face, especially on the forehead and cheeks. No lesions appear on the nose and some hair is still present in the brows. There is no change in sensation of skin of face. This man has had several exacerbations, and during the attacks the nodules are much larger and the color is much brighter. Dark reddish-brown nodules appear on the forearms, wrists and backs of the hands; also atrophic scars and stains from absorbed nodules. There is no muscular atrophy in the hands, but there is delayed sensation. The ulnar nerves feel quite large. On the body nodules are scattered over the back. On the anterior surfaces of the thighs there are scattered pigmented and atrophic areas. Over the buttocks and posterior surfaces of the thighs are grouped nodules and deep stains. On the legs, particularly the lower third, are large and small nodules and a few small nodules appear on the soles. The larger nodules are anesthetic. The right eye shows at the temporal side of the cornea a few injected blood vessels. The left eye shows edema of the cornea, pericorneal injection and a pinguecula at the nasal side. There is some pain in the eyes and photophobia. The edema of the cornea is an early symptom of subsequent ulceration.

135 Stockton Street—1107 Stanyan Street.

THE ETIOLOGY AND TREATMENT OF LEPROSY*

ERNEST DWIGHT CHIPMAN, M.D.
SAN FRANCISCO

It may be granted to be axiomatic that the more complete our knowledge of the cause of a disease the more perfect our prophylaxis and the more rational our treatment. The more we have to deal with conjecture concerning etiology the more uncertain our efforts at control and the more empiric our treatment.

A review of recent progress in the treatment of leprosy necessarily goes hand in hand with a recapitulation of advances made in the search for data relating to its propagation and transmission.

While the lepra bacillus of Hansen is generally conceded to be the specific cause of the disease, its route of entry is unknown, and many important questions concerning contagion remain unsettled.

The theory of direct hereditary transmission is practically disproved.

The precise manner in which leprosy is acquired is as yet unsettled. The theory that the disease is caused by the eating of decayed fish apparently has fewer and fewer adherents, although prior to the successful cultivation of the bacillus it was argued that the bacillus could not lead a saprophytic existence because no medium could be found on which it would grow.

That the disease is spread by direct inoculation would seem improbable from the uniformly negative results in numerous human and animal experiments.

The part played by insects in the dissemination of leprosy has received much attention of late.

Currie, working in the Hawaiian Islands, concluded that mosquitoes feeding under natural conditions on patients with nodular leprosy so rarely, if ever, imbibe the lepra bacillus that we can exclude them as one of the ordinary means of transference of this bacillus from lepers to the skin of healthy persons. The reason for this is that the mosquito in biting goes directly

* Read before the Section on Dermatology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

to blood vessels and hence gets blood unmixed with lymph.

The same observer, in a study of flies in relation to the transmission of the disease, found that certain varieties of flies when given an opportunity to feed on leprous fluids will contain the bacilli in their intestinal tracts for several days, and concludes that while the present state of our knowledge does not permit us to determine whether such insect-borne bacilli are or are not capable of infecting persons whose skin and mucosa are thus contaminated, we are, until we have more accurate knowledge, justified in regarding these insects with grave suspicion.

At various times the gnat, the bedbug, the flea and other insects have been under suspicion. A significant circumstance in this connection is that 55 per cent. of the cases in Heiser's series (to be referred to later) had previously been infected with scabies.

While our judgment as to the rôle of insects in the transmission of the disease may be held in abeyance pending more conclusive results, it is fair to state that the experimental evidence to date squares perfectly with logical reasoning. If, for example, the mosquito were responsible for the spread of leprosy we should look for a much higher incidence. On the other hand, the disease has been associated from time immemorial with defective hygiene, bad surroundings, filth, crowding, etc., and this idea fits in more nearly with the suggestion that the fly, the bedbug, and possibly other agents, as the acarus of scabies, are the real carriers.

A striking fact in relation to contagion is that so often among individuals living in close proximity the disease is not communicated from one to another as from husband to wife or from hospital patients to attendants, nurses and physicians. According to Manson,

> Probably intimate personal contact, and certain concurrences in the phases of the disease with special conditions which are as yet unknown, and which, for all we know, may concur only at long intervals in the intercourse of any two individuals, are necessary for the successful communication and acquisition of leprosy. The simple implantation of the bacillus does not suffice.

A point of major importance in connection with contagion is the determination of the period at which the disease is most readily transmitted. Campana contends strongly that contagiousness disappears with full development of the disease. Dyer corroborates this view to the extent of admitting that the virulence lessens with the duration of the disease and interprets the trophic type as evidence that the disease is more or less effete. In any scheme of national control and segregation of lepers it would seem only just that this fact be considered and segregation made more or less complete according to the degree of infectiousness manifested. Certainly many cases of nerve leprosy in which no organisms are demonstrable in the nasal secretion are not comparable with active nodular cases in infectivity.

We may summarize our etiologic findings as follows:

1. Leprosy is caused by the lepra bacillus though it does not fulfil the postulates of Koch.
2. The disease is not hereditary.
3. The ability of the leper to transmit the disease differs according to the various phases of the disease.
4. The receptivity of an exposed subject varies with diverse physiologic circumstances.
5. The rôle of insects as intermediaries is as yet unproved though certain of them must be regarded with suspicion.
6. The disease is most readily propagated where dirt prevails.

TREATMENT

There are two distinct aims in treatment; the first has to do with prophylaxis, the second with the reljef of symptoms. Prophylaxis should be considered both in relation to the individual and the community. From the individual standpoint personal cleanliness and a condition of such good health that resistance in general is high would seem the best safeguards. From the community point of view, in addition to the maintenance of proper standards of sanitation, there at once arises the question of segregation. In those countries in which segregation has been enforced the number of lepers has steadily decreased.

Undoubtedly the greatest precautions should be observed in keeping lepers' quarters well screened as well as in adopting any measure designed to keep them free from contact with any of the insects under suspicion of acting as carriers.

The symptomatic treatment is naturally considered under such separate heads as general and local.

General Treatment: A review of the substances employed in the many century old search for a specific is not at all necessary. The efforts of recent years have had much to commend them in many cases from the standpoint of analogy. Curiously enough, however, the more plausible the analogy the less fruitful the results.

Reasoning by analogy, serums would seem promising although an immunizing serum has not yet been found. Carasquilla of Bogota prepared a serum by withdrawing blood from a leper's veins at the height of the febrile period when the blood was at its maximum toxicity. From this a leprous serum was separated and injected a few hours later into a horse, three injections being given at intervals of ten days. After another ten-day period a serum was obtained which was injected into the patients. Although he claimed good results, other workers were unable to obtain anything more than transitory improvement and even this was ascribed to the reaction which can be obtained from normal serum. According to Crocker there has been, in some cases, a diminution of the infiltration after the use of leprous serum, but it has been transitory and the injections are not free from danger.

Of the vaccines employed those of Clegg and Duval are the best known. In spite of the fact that reaction followed their use the results of neither have been really curative.

Tuberculin also gives rise to a reaction in lepers and this fact was thought to be an indication for its use. It was found, however, that instead of destroying bacilli it liberated them. Coley's fluid has also been a disappointment.

Leprolin, a substance made from a bacillus which proved to be not the bacillus of leprosy, was speedily found wanting.

Nastin, to which Dyer aptly applies the term "near vaccin," was prepared by Deycke, who cultivated a streptothrix from cases of nodular leprosy. He did not consider this the lepra bacillus, but from it he extracted a well-defined neutral fat to which he gave the name nastin. This, when combined with benzoyl

chlorid and injected into a leper, caused a bacteriolysis. Various results, some good and some negative, were obtained. In general, nothing conclusive came from it.

Salvarsan has had extensive trials, the results of which have apparently brought the unanimous conviction that it is of exactly the same service as arsenic.

Snake venom and antivenomous serum have both been used, but the basis of their employment was superstition and the results were what might have been expected.

Radiotherapy has influenced individual nodules favorably, but while doing this it has apparently aided in the dissemination of the process, and its use is now deprecated by most writers in this field.

Of the purely medicinal remedies many have been proclaimed efficacious if not curative. A few may be mentioned, as mercuric chlorid, ichthyol, europhen, arsenic, strychnin, the salicylic group, creosote, sodium cacodylate, potassium chlorate, red mangrove bark, iodin salts, gurjun oil and tuatua, a Brazilian plant cultivated by the United States Department of Agriculture because of its repute in leprosy. These are but a few of the many remedies which have been tried, and while in many cases much amelioration of symptoms has been observed, none of these remedies has approached the position of a specific. It is moreover to be noted that they are not for the most part symptomatic remedies, in that a special indication exists for the use of any one. They are simply "good for leprosy." Potassium iodid apparently aggravates the disease.

From this list one remedy has been purposely omitted or rather set apart for consideration by itself. Chaulmoogra oil is the one substance which, while not perhaps specific, has best stood the test of time. The great difficulty has been that, to secure effects, large doses are required and few persons can tolerate the drug in sufficient quantity for an extended period. The stomach ultimately refuses to tolerate it in most cases in which it is administered in adequate dosage. To obviate this feature it has been tried hypodermically but it has been absorbed with difficulty and fat emboli have sometimes resulted.

Recently the injection of a mixture of chaulmoogra oil with camphorated oil and resorcin has been employed by Heiser in the Philippine Islands. The mixture consists of

Chaulmoogra oil	60 c.c.
Camphorated oil	60 c.c.
Resorcin	4 gm.

The camphorated oil was added to make a more readily absorbable substance and the resorcin was added because of the fact that Unna had reported excellent results from the chaulmoogra oil-resorcin combination.

In a series of twelve cases only nine patients took the treatment throughout the prescribed period. The net results in the series were as follows:

Apparent cures	11.44 per cent.
Apparent clinical recoveries	44.44 per cent.
Showing marked improvement	33.33 per cent.

The details of treatment, to quote from Heiser, are the following:

The injections are usually made at weekly intervals in ascending doses. The initial dose is 1 c.c. and this is increased to the point of tolerance. Much difference exists among the cases as to the amount of the mixture which they are able to take. In some cases a few cubic centimeters produce marked reactions in the lesions, accompanied by fever and cardiac distress. Sometimes it is better to reduce the amount of the dose and inject at more frequent intervals. The object sought is so to regulate the dose as to prevent reactions of too violent a character. Quicker results are also apparently obtained when it is possible to inject the mixture into large leprous deposits or to divide the dose by injecting it into a number of smaller infiltrations. Attention is drawn to the fact that no strychnin was used. Many writers have regarded strychnin as an essential part of the chaulmoogra oil treatment. Saline purgatives are freely employed. Two per cent. hot sodium bicarbonate tub baths are prescribed every other day. Those who take prolonged baths regularly seem to improve more rapidly than those who do not.

Local Treatment: The importance of active local treatment must not be minimized. This is especially true in the early stages, in which, according to some authorities, the disease can be arrested by radical surgical treatment followed by cauterization.

Viñeta-Bellaserra affirms that the infiltration of lesions often coincides with febrile exacerbations, digestive disturbances, etc., and has found that the destruction of the lesions with thermocautery or galvanocautery causes an immediate improvement in the adjacent lymphangitis as well as in the constitutional symptoms.

Combined general and local treatment: Unna claims several cures from a combination of local and constitutional measures. His treatment consists of the internal administration of ichthyol in ascending doses, while an ointment of 10 per cent. pyrogallic acid in lanolin is employed for inunction into arms and legs twice daily. At the same time a 10 per cent. chrysophanic acid ointment is rubbed into the cheeks and the trunk, while a plaster consisting of chrysophanic acid, salicylic acid and creosote is applied daily to the forehead and chin. This treatment is continued for one month and is followed by a course of warm baths before it is resumed.

Certainly the prompt, free excision of a single macule or tubercle of leprosy in the absence of any constitutional signs would seem to be definitely indicated, on the ground that it may be a primary focus from which the virus has not yet been disseminated.

The Treatment of Special Symptoms: For the restoration of sensibility and muscular power in the anesthetic forms, nerve stretching and nerve splitting has been practiced with success in some instances.

Perforating ulcers are treated on ordinary surgical lines. Treves has recommended a preliminary softening with a paring down of the thickened epidermis followed by a filling of the sinus with a cream of salicylic acid and glycerin to which 2 per cent. phenol (carbolic acid) is added. The dressing consists of a device rather like a corn plaster, which is designed to remove the pressure from the part.

Some cases of perforating ulcer have been healed by stretching the plantar nerves.

The question whether the existence of leprosy does or does not interfere with the success of surgical operations must be answered in the negative. As a matter of fact not only in perforating ulcer but in various conditions, as laryngeal stenosis, tracheotomy, iridectomy and the removal of necrosed bone, surgical intervention has often been resorted to with no untoward results.

To recapitulate: Individual prophylaxis includes correct hygiene and close surveillance of possible insect carriers. Community prophylaxis demands segregation.

Medicinal treatment is altogether empiric though the future possibly holds some specific in store. At times cure is spontaneous.

At present the chaulmoogra oil-resorcin combination given subcutaneously promises best results. Climate, food and good hygienic conditions influence all cases favorably. The importance of hot baths must not be forgotten. Several baths daily are undoubtedly of value. An Old Testament writer records the cure of Naaman of his leprosy after seven dips in the Jordan. Whether we view this literally or as a bit of symbolism it nearly epitomizes our modern treatment.

240 Stockton Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MONTGOMERY, MORROW AND LEE, CHIPMAN AND O'NEILL

DR. A. A. O'NEILL, San Francisco: [Dr. O'Neill had no written paper. In part, he said:] In 1878 it became necessary to establish a place for lepers in this country, and there were eighty-two lepers in the institution over which I now have control. This number has been diminishing gradually, until we now have fifteen. The patients admitted to the institution have been brought to San Francisco from other places. Two factors are to be taken into consideration in this connection, and one of them is from the economical standpoint. It is said that if the British government took care of all the lepers in its possessions it would probably bankrupt the government. Then we have to combat medical superstition. The old idea is that diseases such as this were exhaled from the body of the patient, and only yesterday I heard of an instance in San Bernardino in which after a leper died and was removed they destroyed the house by fire. Such a sentiment as that in a community is very hard to meet and combat.

There are 238 known lepers in the United States, and I for one would strongly advocate placing these persons on one of the islands off the coast of California, and put that island under the control of the Public Health Service. There was an effort made to establish a leprosarium in the state of Washington, but local feeling was so strong they had to abandon the project. As I said before, it is a matter of education. Of ninety-five human beings who were inoculated with leprosy, or leprous material, one developed it. That means that we are unable to inoculate the ordinary laboratory animals with these diseases; and that would show there is little or no danger from the ordinary nerve type of leprosy. Where the leper has no open lesions, and no open organism is found, and no discharge from the nose, I think he should be allowed to pass around in the community. At the same time, in Norway, the humane method of segregating them in their own homes, does not result in the separation of the members of a family, and the patient is more content to be with his own family. The number of cases described as arising from contact are so few they can be neglected. In other words, a leper with no open lesions might be permitted to remain with his family, and those having open lesions should be segregated.

DR. JOSEPH ZEISLER, Chicago: Ever since our country acquired the Hawaiian Islands and the Philippines, I have felt that our interest in the subject of leprosy has increased. In this respect I have even felt that in the curriculum of the medical schools some instruction should be given in the subject of leprosy. I have omitted during no course I have given in the Northwestern University, the presentation of this subject in one or two full lectures, but, unfortunately, merely in a didactic way.

Our great predecessor, Jonathan Hutchinson, tried to base a genealogical study of this subject among people living on the seashore. The famous fish theory started with Jonathan Hutchinson—and perhaps it has remained with him.

As long as our treatment of leprosy is the same as it is today, we shall have to continue to hammer at the general hygienic treatment of each case, and await the day when a specific treatment of leprosy may come. In the meantime, as long as our therapeutic efforts are so feeble, we must look to prophylactic measures, and I am in favor of isolation and colonization of lepers. Our laxness in handling leprosy is lulling the public at large into a false feeling of security. It is not in the same category as scarlet fever and smallpox. The incubation of leprosy is so long that we cannot tell when the disease may develop. It has been eliminated in certain lands by segregation. We have no means of stamping out leprosy by vaccination, as in smallpox. Then, too, it is a national affair, and our national government has not been asleep in this matter by any means. I believe we should also have state action; and there should be a leprosarium in every state where such cases could be collected and segregated.

We have in Chicago, I think, at all times at least a dozen cases; and when we meet with such cases we are absolutely helpless as regards the management. The health board does not know how to take care of them. Recently we had a sensational case in Chicago where a leper was discovered and imprisoned; he escaped from confinement and later was recaptured. I believe our present attitude on the subject of leprosy must be of interest, of necessity, to our national and our state governments, namely, that we advise isolation and care of every case in proper hospitals and sanatoriums.

DR. GEORGE W. MCCOY, Honolulu: In relation to the public control of leprosy through segregation, it may be largely a matter of geography. In certain communities leprosy does not spread. Judging by the reports of New York dermatological societies, there are from forty to fifty cases at all times in the city of New York; and unless I am mistaken, no case has been of local origin. They are all imported. Obviously measures different from those required in, for example, Hawaii, would suffice. Then we must consider the type of leprosy. In Hawaii, where we have considerable experience in segregation, in a general way we segregate the nodular type and the ulcerating nerve cases. Abroad that is the distinction made by law in some countries. The pure nerve type cases are not usually segregated; we have a system of paroling those patients. The paroled leper is required to report to a government physician once every three months. He is at once recommitted to the leper hospital if he becomes a menace to the public health.

Dr. Morrow made no mention, in discussing the diagnosis of the disease, of the examination of smears from the nasal cavities. Ordinarily we do not find the bacilli early in the course of the disease in the nasal cavities; but occasionally you can find them when they cannot be detected elsewhere. Recently we had two cases of what appeared to be pure nerve leprosy in which a large number of bacilli were found in the nasal scrapings without difficulty.

Our method of making smears may be of interest. We grasp the nodule between thumb and index finger, squeeze the blood out of it, take a safety-razor blade, make a short incision in the bloodless nodule, and scrape out some of the nodule juice, in which the bacilli can be demonstrated if present. If that fails, we excise a piece of skin. Of course we throw away the blade after using once.

In connection with the treatment of leprosy I would like to emphasize the great help that may be given to lepers by surgical means. This refers to the work of Dr. Goodhue, medical superintendent of the Molokai Settlement, and Dr. Hollmann, in immediate charge of the patients at the Honolulu station. Amputation of hopelessly ulcerated fingers and toes is advisable in many instances.

Then there is the great frequency with which tracheotomy is required. I suppose I help Dr. Goodhue with at least twelve or fifteen tracheotomies in a year among a leper population of six hundred.

Dr. Zeisler spoke of incision. We had in Hawaii recently the youngest case of leprosy of which we could find any record. The patient was a child 19 months old, born of leper parents. A nodule appeared on the forearm and was excised by Dr. Goodhue; we are going to watch that case with much interest. We do not believe there is any good reason for believing that the child will be materially benefited by the removal of the lesion. I do not believe that there is any such thing as a recognizable "initial lesion" of leprosy.

DR. A. RAVOGLI, Cincinnati: I agree with the views of Dr. McCoy on the possibility of initial lesion in leprosy, and I find this is validated by some findings, especially in Sardinia. Frequently it begins with an ulcerated wound of the foot. That the mucus of the nose is loaded with bacilli, lepra bacilli in the most of the cases, there is no doubt; and it is now claimed that a patient spitting in the streets or elsewhere, someone walking there without shoes (as many children do), with a lesion of the skin, is liable to be inoculated with lepra.

There is a custom in the Philippines of having a very large cigar hanging from the ceiling; and every member of the family takes a few puffs at it in passing. Very likely this custom has been indicted as one of the methods of spreading leprosy.

Leprosy is very slightly contagious, yet is growing by contagium. Colombini in his work, "Leprosy in Sardinia," refers to a woman who had been suffering from leprosy for twenty-two or twenty-three years, living and working all the time in the same house with two brothers. She was taken to the leprosarium and so far her brothers had not shown signs of leprosy. On the other hand, there is no doubt that leprosy shows its contagious nature. In New York at a meeting of the American Dermatological Association we were shown a case of an Italian with tubercular lepra. I asked him where he had taken leprosy. He said that four or five years previously he had come to New York perfectly well. In New York he had got the disease, and his brother living with him was infected in the same way. This shows beyond doubt that leprosy is contagious; and for this reason the patient must be isolated.

Lama contends that the *pulex penetrans* (a flea) is the insect that carries leprosy. He claims to have found the first lesions of lepra as diffuse red patches in the limbs, or a tubercle, or ulcerated nodule.

In my opinion lepers must be segregated and left together, and not be in contact with others, because of the dangers obviously present for the propagation of this disease.

DR. RICHARD L. SUTTON, Kansas City, Mo.: I should like to ask Dr. McCoy and Dr. Schmidt a question regarding the status of the bacilli which give rise to the nerve and cutaneous lesions. Charles J. White's statistics, and the results of Nichol's investigations would indicate that some particular strain of the *Spirochaeta pallida* is responsible for syphilis of the nervous system. Is it probable that some certain strain of the bacillus of leprosy also exhibits a predilection for nervous tissues?

DR. SCHMIDT: I might say in answer to the question of Dr. Sutton that the serologic examination of leprosy is not of great value. It is quantitative rather than diagnostic. Some years ago some work was done in our university in relation to rat leprosy and human leprosy; and it was found that serologically they were the same. Bacteriologically they were the same.

DR. EVERETT S. LAIN, Oklahoma City: In my examination several years ago of several thousand Indians in Oklahoma, and also in recent years for different skin diseases, I made particular search for leprosy, and have not found any; at least, I have not made such a diagnosis, although the Indians have many of the other common diseases. Therefore, I have concluded that this is an imported disease which has not reached the American Indians, who are inland.

DR. HOWARD FOX, New York: In regard to biblical leprosy, I feel convinced, as stated in my chairman's address, that there is no reference in the Old Testament to any disease which can positively be recognized as the leprosy of the present day. If it is impossible to recognize a description of leprosy in the 59 verses of the 13th Chapter of Leviticus, how much less possible is it from some of the miraculous accounts of the disease, as when Moses put his hand into his bosom at the command of the Lord and on drawing it out we read "behold his hand was leprous as snow." Similar to this is the leprosy of Miriam and of Gehazi, the servant of Namaan, the Assyrian general who on account of disobedience was told by Elisha that "the leprosy therefore of Namaan shall cleave unto thee and thy seed forever; and he went forth from his presence a leper as white as snow." Furthermore, the leprosy cured by our Savior after the sermon on the mount cannot be considered as examples of modern leprosy, but might well have been psoriasis.

Regarding the control of leprosy, a great many dermatologists at the present time feel that the disease can only be properly controlled by the federal government and not by the individual states. In New York state we do not have the stringent laws concerning leprosy that are enforced in Pennsylvania and Massachusetts. In consequence there are practically no cases at large in either of these states, while there are probably always forty or fifty cases in New York City, and some would double this estimate. In a paper read before the New York Academy of Medicine in 1911 I made the statement that I had personally examined thirty cases within a period of one year in New York City, though it must be said that a special search was made at this time. It would be wise, it appears to me, in making laws for the isolation or control of lepers, to distinguish between the harmless, anesthetic cases, and the nodular cases in the ulcerating stage.

DR. DOUGLASS W. MONTGOMERY, San Francisco: As regards the initial lesion in leprosy, I think it is frequently an erythematous leprid. I have seen such a lesion on the forearm in its early stages and have watched the disease creep up the nerves from it. Of course the erythematous leprid may not be the sole initial lesion in leprosy. That leprosy may also enter through an ulcer of the leg or foot, or by causing an ulcer in this situation, would be also a probable eventuality.

I do not think there is any doubt of the desirability of establishing a national leprosarium. The important question then arises, What place should be chosen for the establishment of such an institution? Should it be Hawaii, Louisiana, San Francisco or some other place? I think it should be in some place where leprosy is not endemic. We do not know the mode of transmission of leprosy. We know it enters a region, increases with fair rapidity, and then dies out. We know it died out in Central Europe, and we surmise that it did so because of segregation. The same thing took place in Norway, where we think its decrease was due to the segregation of the afflicted, and to the increasing well being of the people owing to the influx of wealth brought by tourists. But there may be climatic conditions which influence the disease, and this is the important point. The leprosarium should be located in a locality where leprosy does not thrive, where it is not endemic, and where the disease runs little chance of increasing, and the afflicted individual runs the best chance of recovering.

As to the miraculous cure of Naaman, I would say that there are naphtha and sulphur deposits on the Jordan, which I think are now being exploited. Naaman was told to go and bathe seven times in the River Jordan, and he probably went into the sphere of influence of the naphtha or sulphur and was cured of the itch.

DR. HOWARD MORROW, San Francisco: There is no state law which provides for the segregation of lepers in California. There is a city ordinance in San Francisco which compels us to notify the health department, and they are compelled to keep them in the Isolation Hospital. But if we kept at the Isolation Hospital all the lepers we see from time to time, we would have an institution there to rival Molokai. In the last three weeks I have seen three subjects in various stages of leprosy. One came from Honolulu, with a nodule on her eye and typical leper hands; nothing

else. That woman was advised to return to Honolulu and go to Molokai. Yesterday a woman was sent to me from Mexico; she arrived at 10 o'clock, and I saw her at noon; I told her husband what the trouble was, and at 5 o'clock she was on the way back to Mexico. The other was a Spanish boy, and I advised him to return to the Philippines. If he does not, we will put him in the segregation colony. I have kept him here longer than I intended in order to have his appear before the society.

DR. A. W. LEE, San Francisco: I am entirely unfamiliar with the laws dealing with lepers in different parts of the United States, but, no doubt, every one who has seen a great number of cases of leprosy has had his humane side strongly appealed to. It is difficult for one to force himself to the opinion that isolation is absolutely necessary in all cases. The first patient presented here is of a very high type of mentality, extremely sensitive and readily amenable to reason. If it is possible to give semi-isolation for this young man, it would be a very advisable thing to do.

DR. A. A. O'NEILL, San Francisco: When I read the work by Duval and Harris of how they had taken the serum and passed it through Japanese mice, and then increased it so that laboratory animals could be inoculated, I concluded that we might be able to settle how it is transmitted. But since this meeting has started I have learned that Duval has repudiated much of that work.

I have been struck by the fact that leprosy is a disease of the semicivilized. You find it along the coast of other countries to be sure; but it does not thrive in an uncongenial soil. Where leprosy was introduced by a Chinaman into Hawaii, it became ripe. Such is the history of other diseases introduced among such people. It was the same with leprosy in Australia, where the leper made his appearance among the aborigines.

In Hong Kong, in 1894 (speaking of the danger of transmission), I was shown the latrine where the coolies went; it was explained to me that bubo was taken up by those coolies who went barefooted.

I am convinced that more thorough study of the transmission of this disease, such as by the bedbug, and like means, will bring us finally to a solution of the question. I have yet to see a case which had its origin in California. I saw one reputed case in a woman, but there is a question in my mind as to whether she was telling the truth in saying she had not been outside of the state.

To give you an idea of how they try to make their ideas conform to your wishes or views, the man here said he was a native Indian and had not been out of the state; but I recognized that he was a Hawaiian. I was to be shown a native Californian who had not been out of the state.

I would suggest more humane treatment of these persons. One of my patients absconded and went to Denver, where he was placed in the pest house. They had a large number of patients. Every patient with smallpox wanted to flee from the hospital. This man recalls the fact that the number of soldiers returning from the Philippines afflicted with leprosy must not be overlooked by us. We must remember that, visiting such foci, it is not unusual to become infected; and we must remember that leprous husbands have lived with wives, and vice versa; and there are children born to them, notably among the leprous parents at Molokai. The danger of contracting the disease is a very remote one to my mind, when we have this direct evidence of ninety-five people being inoculated without results.

DR. ERNEST DWIGHT CHIPMAN, San Francisco: I am glad Dr. O'Neill spoke about the transmission of leprosy by parasites. I believes the more we study the surroundings of leprous patients the more we will be convinced of the possibility of various insects being an important etiologic factor.

Polypharmacy

Eye of newt and toe of frog,
Wool of bat and tongue of dog,
Adder's fork and blindworm's sting,
Lizard's leg and howlet's wing.

—*Macbeth.*

TRANSVERSE INCISION IN OPERATION FOR APPENDICITIS

A. E. ROCKEY, M.D.
PORTLAND, ORE.

It is now more than eleven years since I devised and began to use the transverse incision in operations for appendicitis. My first publication was in the *Medical Record* of New York in November, 1905, in an article entitled "Transverse Incision in Abdominal Operations." Since that time I have published another paper on the method in *Northwest Medicine*, February, 1910.

Gwyllam Davis of Philadelphia, working independently, published a paper in the *Annals of Surgery* for January, 1906, describing a transverse incision operation. In the article on "Appendicitis" by J. B. Murphy in Volume Six of Keen's Surgery my operation is described in a comprehensive paragraph.

Notwithstanding these publications the method has attracted but little attention, and the vertical right rectus incision is the one in general use. I believe that the transverse incision is greatly superior to the vertical as a routine procedure. Eleven years' experience has confirmed me in this, and it is endorsed by a few who have adopted the method.

The world over it is probable that operations for appendicitis outnumber those for any other one intra-abdominal disorder. It would then seem important that a method with points of advantage, in an operation of such frequency, should have a sufficient publicity to bring it to general attention. It is for that reason that I am presenting it to this association; and also for the reason that previous descriptions have not been adequately explicit.

Simple and easy in execution, it is not quite so easily understood as the right rectus incision. For that reason a few moments' attention to the anatomy of the abdominal wall will be necessary. In the region of McBurney's point, the fibers of the internal oblique and the transversalis run directly transverse, and the external oblique is only an aponeurosis. The aponeuroses of these muscles are united at their insertion at the border of the sheath of the rectus, the fibers of the broad tendons becoming a part of the sheath. This junction is the key to the situation in this operation.

The skin incision at the place of election is made directly transverse with its center on McBurney's point, though it may be lower if conditions require. While the favorite anatomic situation permits easy access through a short incision, which may be desirable in children, or small persons with thin abdominal walls, the incision in ordinary cases should be 2 or 2½ inches in length, and may be longer as the case requires. Continuing deeper, it passes through the outer part of the sheath of the rectus, severing the tendinous border and the aponeurosis of the muscles on a directly transverse line. When this is done, the handle of the scalpel may be inserted below, and the finger above, and the wound spread wide open by a single pull. Not a muscle fiber is cut. The fibers of the internal oblique and transversalis separate in a transverse direction. The aponeurosis of the external oblique is broader than that of the other

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

muscles, thus permitting the incision through this to be carried further to the outer side. When the muscular part is reached, the spreading pull separates the fibers obliquely upward. The muscle is, however, as elastic as rubber, and the retractor, which is at once inserted, drawing outward, readily brings it into the transverse line. The rectus is now drawn back into its sheath at the inner side by another retractor. The peritoneum is divided on the transverse line. The splendid exposure which this incision gives and the ease with which it is made will surprise the surgeon who tries it for the first time.

Definite preoperative diagnosis is important. The transverse incision across McBurney's point is not adapted to pelvic operations. If doubt exists as to the differential diagnosis between the appendix and the tube, or the appendix and the gallbladder, as the site of trouble, the vertical incision is preferable. In the occasional case, when the appendix is adherent in the pelvis, a preoperative diagnosis can usually be made.

Recently I had two such cases in one day, both with acute abscess, and both correctly diagnosed before operation. One of the patients was a boy 9 years of age; the other was a man of 22. Both were operated through low right rectus incisions, treated with drainage in Fowler's position, and both made good recoveries.

In emergency the transverse incision may be readily lengthened to permit general abdominal exploration, and the performance of extensive operations. A case, which I have reported elsewhere,[1] is of sufficient interest in this connection to bear repetition. A young surgeon, who had learned and adopted my operation during his internship, had a man with a considerable mass on the right side of his abdomen, which the surgeon had diagnosed as an appendiceal abscess. He opened the abdomen by transverse incision across McBurney's point only to find that he had an extensive malignant disease of the cecum, and the adjoining descending portion of the transverse colon, with which to deal. In this emergency he covered the part with towels, continued the anesthetic lightly, and telephoned to me. I came to his assistance, and, by extending the incision on the same line, readily succeeded in resecting a part of the ileum, the cecum, and half of the transverse colon, making the anastomosis of the severed ileum with the stump of the colon. Primary union and a smooth convalescence followed, and the patient was not aware that anything more than an ordinary appendectomy had been done until he was ready to leave the hospital.

In interval cases or in the acute form before rupture this incision is ideal in the facility of operation and firm union with a minimum scar. Its great point of advantage, however, is in the ordinary pus case requiring drainage. The pus appendix is retrocecal or at the outer side of the cecum, in a very considerably greater proportion of cases than is realized by the operator, whose approach is from the front. In these the appendix lies directly under the line of incision. In such cases, instead of pushing the small intestine out of the way and protecting it with gauze pads it is not seen, and consequently not exposed to handling in an infected field. The advantage of such a direct approach in cases of this sort is greatly in favor of the transverse incision. Exposure of the general cavity is avoided, and drainage greatly facilitated.

When the appendix is in the iliac fossa, the finger readily separates its adhesions, and it is delivered with the cecum outside the incision. In any other situation the cecum, which presents first, is the direct guide. A few trials in pus cases will convince the surgeon of the life-saving advantage afforded by this approach, the favorable location for drainage, and the comfortable position in which the patient may be placed. Safety and comfort are favored by such a direct approach. Postoperative ileus, with its vomiting and disquieting gas pains, is minimized. The drainage track is short and direct. A single cigaret drain is placed in the outer angle of the wound posteriorly at the outer side of the cecum.

After the operation in drainage cases the patient is placed in bed lying on the right side with the knees drawn up, and the shoulders and head gently elevated on two or three pillows. This brings the drain to the lowest point in the abdominal cavity and sufficiently elevates the diaphragm to bring it above the line of sepsis. There can be no gravity accumulation of a septic pool in the pelvis depending only on an inefficient capillary drain to take it out, as must certainly be the case in Fowler's position. The comparative comfort of the positions is all in favor of the lateral. It is the position that is most naturally sought in restful sleep. It permits considerable shifting, both of the limbs and trunk, without impairing its efficiency. Most important of all, it is a direct gravity drainage. It is a hole in the bottom of the septic pool, rather than a wick in the top. In the outward location of the drain it passes through the muscular part of the incision, permitting closure of the aponeurotic portion. This diminishes the liability to hernia in drainage cases.

Hernia will, of course, occur in a few cases when the infection is exceptionally virulent. In such cases a tissue necrosis precedes healing, and the gap thus formed may produce a hernia. The liability to hernia is less than with other incisions for the additional reason that nerve fibers are not cut and there is no muscular pull across the line of incision.

In the closure of the wound in clean cases, it will be seen that a single suture, passed deeply through the conjoined aponeurosis at the border of the rectus which I have called the "key" to the incision, will approximate the entire wound. The rectus slips back into its normal position and the transverse muscles are brought together. As a matter of safety I usually introduce two chromic sutures here and leave them untied until the remaining tissues are carefully approximated with fine continuous suture. The "key" sutures are then tied and give great strength to the closure. For this reason the morbidity of the operation is short, and a patient of any type may be sooner out of bed with safety than with any other method of operation.

1. Rockey, A. E.: Surgery of the Colon, Northwest Med., July, 1912.

ABSTRACT OF DISCUSSION

Dr. Robert Emmett Farr, Minneapolis: I can't say that I understand exactly Dr. Rockey's incision, as I have not seen his pictures. The incision which I have used, and in which I am much interested, involves the cutting of the external oblique aponeurosis if low down, or muscle if high up. The incision is made transversely and therefore

cuts the external oblique fibers obliquely. This incision was described by Elliott of Boston some ten years before Dr. Rockey described it. It seems to me that it is greatly superior to the incisions of Lennander, Battle, Jalaguier and Kammerer, which divide the abdominal nerves which enter the rectus transversely. The closure of the incision is very simple, because these cut fibers of the external oblique will in all instances, in my experience, at least, submit to imbrication. Boeckman has used this incision for over ten years, and at his solicitation I began using it. I make the incision high up or low down, depending on the pathology I expect to find. The incision avoids important nerves and as Dr. Rockey has said, will drop together almost without a suture of any kind. It is closed in the same manner as the McBurney incision, excepting that the cut fibers of the external oblique may overlap. With this incision one may secure an opening reaching from the anterior superior spine to the midline. As I have been removing the appendix, at least in all of the simple cases, under local anesthesia, I feel that I have given the incision a severe trial.

DR. A. V. MOSCHOWITZ, New York: The remarks I am about to make may not be germane to the subject, because thus far at least I have had no chance to use the transverse incision in appendix operations. I have been perfectly satisfied with the McBurney or the Kammerer incision. I have used the transverse incision, however, in the upper abdomen for a number of years, and have become so satisfied with this, that I now consider it part of my normal incisions for all operations above the umbilicus. There is a principle involved in the transverse incision. One of the points I wish particularly to mention is that in gallbladder operations and in all operations on the stomach it gives perfect exposure and is very easily sutured, and the patients have little postoperative discomfort and distress from distention, no hernia and a minimum amount of scar; the wound heals kindly. In my experience the operation is exceedingly simple; the entrance through the abdomen is a trifle more difficult because of hemorrhage, but this is counterbalanced by the ease we have with the final suture. It can be made any length. The ease of closure in particular, in spite of the drawbacks, surely warrants a more extended trial of it.

DR. J. CHRIS O'DAY, Portland, Ore.: Dr. Rockey saw me do a McBurney incision and asked me if I had tried his transverse incision. I said no. Dr. Rockey cannot tell you just how, but try it and when you do you will stumble into the easiest abdominal incision you have ever seen.

DR. O. O. WITHERBEE, Los Angeles: To further corroborate what Dr. Rockey has given us, I wish to say that in simple cases of appendicitis it is one of the most satisfying procedures I have had the pleasure to employ. I would even like to simplify, if I could, the description he has given of the method of entering the abdomen. After the skin incision is made you need no more cutting. On reaching the muscles one little clip with the Mayo scissors in the external oblique, and then opening the scissors enlarges the incision to a sufficient extent. The same procedure is effective in the next layer and very quickly you expose the peritoneum. With forceps this is lifted up and an opening is made into the peritoneal cavity. Previous injection with novocain blocks the nerves and avoids the deep anesthesia that would otherwise be required. In the majority of cases it is not necessary to pass more than one finger into the abdominal cavity to hook up the appendix, and in a few moments your operation is completed. A single stitch is sufficient in closing the muscles. With this method one can hardly realize that he has been into and out of the abdominal cavity.

DR. A. E. ROCKEY, Portland, Ore.: Dr. Farr called my attention to Dr. Elliott's having already previously used the transverse incision, but it is not mentioned in the textbooks. A French author published a description of a similar transverse incision the same year of my publication. It is evident that the natural advantages of the incision made it apparent to others. The surprising point is that there is no other incision made for the radical case. I prefer to make the incision high. There is not much advantage in making the incision down where Davis has described it, for the reason that the mesenteries of the cecum are high and not low, and when the cecum falls down lower it is not attached below except by accidental processes, so that in the great majority the cecum can be turned out, and in the best cases the drainage point is in a better location with a high incision. At this point of the aponeurosis of the external oblique it is not necessary to cut the muscle fibers at all, as when you get to the outer part in this spreading motion which I have described, with one movement the fibers of the external oblique spread forward widely.

RIGHT-SIDED HYPERTENSION WITH OCCASIONAL CARDIAC DILATATION AS POSTOPERATIVE COMPLICATION *

F. F. SIMPSON, M.D.
PITTSBURGH

The literature and individual experiences abound with instances of acute dilatation of the heart in the course of and following such acute infectious diseases as pneumonia, diphtheria, etc.

Athletes are required to train for events entailing unusually severe exertion. That acute cardiac dilatation often occurs among those who enter Marathon races has been abundantly demonstrated by roentgenograms of the heart. Persons with weakened myocardium caused by the stress of excessive business or social cares, by marked anemia, or by the prolonged absorption of bacterial toxins, biliary poisons, etc., are warned to avoid sudden, excessive exertion. Transitory or fatal dilatation of the heart may readily occur when these very ordinary precautions are disregarded.

To perform surgical operations in the presence of such depressing agencies is to take serious risks which must be minimized in every way if even a reasonably safe outcome is to be expected.

To impose on such hearts the burden of a general anesthetic throughout a prolonged operation done with the patient in the extreme Trendelenburg position, and later to give unnecessarily large intravenous injections of normal salt solution, would be to multiply these dangers instead of minimizing them.

Wertheim[1] has reviewed 500 consecutive hysterectomies for uterine carcinoma. Of that series ninety-three patients died. All who died were subjected to necropsy. Even at necropsy, acute dilatation of the heart was found as the sole cause of death in twenty-two instances.

When one series of hysterectomies for cancer done at a world-famous clinic shows a death rate of 4.4 per cent. from this one cause, I need present no further evidence to prove that it is a factor in postoperative mortality.

While I was visiting the Lakeside Hospital at Cleveland about five years ago, Crile was doing a direct transfusion of blood from husband to wife preparatory to a serious operation on the anemic woman. Crile called attention to the fact that it was very easy to dilate the heart if blood went across too quickly.

---

*This article embodies the essential features of the Chairman's Address, read before the Section on Obstetrics, Gynecology and Abdominal Surgery of the American Medical Association, June, 1913. The complete paper, with charts, tracings, drawings and roentgenograms, appeared in the transactions for that year.

1. Wertheim: Die Erweiterte Abdominale Operation bei Carcinoma Colli Uteri, Vienna, Urban and Schwarzenberg.

Indeed, as he spoke, it occurred before our eyes. The face of the patient was slightly suffused, breathing became shallow and more frequent, the pulse quickly became accelerated, and the area of the right heart was increased as shown by percussion. The transfusion was temporarily stopped, the woman's head was elevated and her circulatory equilibrium was quickly restored. After a few minutes she was given more blood, and then a successful operation was done.

The ease with which dilatation of the heart was produced, the absence of precordial distress, the slight change in the patient's condition, and the readiness with which it was controlled, when recognized at its very inception, were a revelation. I had expected to see a picture of extreme gravity when cardiac dilatation was imminent. But here it had occurred, had presented no picture of extreme gravity, was promptly recognized and was promptly controlled.

This incident recalled to my mind a number of patients observed in my experience as an assistant and in my earlier individual work. The patients fell into two groups. In one group were those who were weakened by disease and had failed to rally after desperate operations. The pulse when they reached their beds was probably 130 and small; the patients were restless and seemed to have lost their courage. Instead of returning promptly to normal, the pulse rate and quality grew progressively worse, until a fatal termination was reached, from twelve to thirty-six hours later.

In the other group this clinical picture developed suddenly, from eighteen to forty-eight hours after operation. It was thought at that time that the weakened circulation was probably due to a small volume of blood and to cerebral anemia. Following the practice of the times, the foot of the bed was elevated and a liter or more of normal salt solution (with or without epinephrin) was given into a vein. We were puzzled and dismayed by a rapidly fatal termination in spite of what we were pleased to consider our beneficent efforts. Nor do I believe our experience was in any way unique.

In the light of Crile's work on transfusion, it then seemed to me that our cases may have been instances of acute cardiac dilatation, and that it would be worth while to apply his principles to our work. Each time the syndome appeared thereafter, the patient's head was slightly elevated, fairly vigorous stimulation was begun, and a competent internist was asked to examine the heart.

Our records in the period during which we have been looking for this affection show fourteen cases in which grave circulatory disturbances and probably acute dilatation of the heart were then thought to have occurred. All the patients recovered.

A fairly extensive review of the literature shows a considerable number of excellent papers on acute cardiac dilatation during chloroform narcosis, in the course of and as a sequel to acute infectious diseases, after sudden overexertion, etc. Except the recent article by Gatch, Gann and Mann,[2] very little indeed has been said of this affection as a postoperative complication when ether is used.

Our conception of the clinical picture was therefore gradually formed; indeed, it is not perfectly clear as yet. We have, however, formed the definite plan of looking with suspicion on patients whose myocardium may be presumed to have been weakened by hyperthyroidism, prolonged or very recent absorption of bacterial toxins (such as those of pneumococcus, streptococcus, diphtheria bacillus, etc.), of biliary poisons, of toxins from malignant neoplasms, by marked or prolonged anemia, etc. When after operation, particularly in these cases, we observe a rapid pulse that does not come promptly to normal, we look to the central circulatory system for the cause until other adequate explanation is found.

When the pulse, having fallen toward 100 after operation, shows an abrupt rise of twenty or more beats at any time during the succeeding two or three days, we expect to find one of the following causes for that disturbance: hemorrhage, atropin, right-sided hypertension, dilatation of the stomach or the rapid absorption of toxins surrounding a pelvic drain. This is usually precipitated by increased intrapelvic pressure following an enema.

If to the rapid pulse is added a slight cyanosis, sudden decided weakness, decided apprehension, etc., with increased area of the right heart, the clinical picture is probably that of increased venous tension and should be treated as such.

With this picture in mind we have made a review of our last 2,100 consecutive abdominal sections, which shows that there were forty-nine deaths — a mortality of 2.33 per cent.

Analysis of the last 2,000 abdominal operations shows that the syndrome of circulatory embarrassment due to right-sided hypertension or to cardiac dilatation was observed only forty-two times, or in 2 per cent. of our abdominal operations.

As conclusions arrived at previous to Feb. 15, 1913, were based largely on clinical observations, it was determined to make parallel observations along the following lines:

1. A series of physiologic experiments on dogs, directed by Dr. Clyde Brooks of Pittsburgh.

2. A systematic study, by Dr. H. G. Schleiter, of the circulation with cardiac measurements before and after operations in a series of patients subjected to abdominal operations.

3. Systematic Roentgen-ray studies, by Drs. Russell H. Boggs and Joseph Foster, of the same series of patients based on pictures taken under like conditions before and after operation.

4. A continuation of the clinical work with an analysis of findings in the series of patients studied by Dr. Schleiter and by roentgenograms.

PHYSIOLOGIC MAMMALIAN EXPERIMENTS

The plan of these experiments was to study, on the one hand, the circulation of normal dogs, and on the other hand, that of dogs with weakened circulation caused by hyperthyroidism, or by long subjection to methods commonly employed in operating rooms, or in the postoperative treatment of patients. Dogs were completely anesthetized with ether. Both venous and arterial manometric blood-pressure tracings were recorded on the drum, while the dogs were kept in Trendelenburg, Fowler's and in horizontal positions, and also during the intravenous injection of salt solution.

In some instances the thorax was opened so that the heart and great vessels could be directly observed.

2. Gatch, W. D.; Gann, Dewell, and Mann, F. C.: The Danger and Prevention of Severe Cardiac Strain During Anesthesia, THE JOURNAL A. M. A., April 26, 1913, p. 1273.

The results of these experiments may be briefly summarized as follows:

1. On a vigorous dog with normal circulatory apparatus:

In all instances, change of position caused a very slight and transitory change in arterial and in venous pressure.

When the animal was placed in a marked Trendelenburg position there was a momentary slight decrease in arterial pressure and later a slight fall in venous pressure. When 0.9 per cent. sodium chlorid solution was rapidly injected through the external jugular vein, there was a sudden great increase in venous pressure followed by a rise in arterial pressure with a synchronous increase in amplitude of heart beat recorded on the tracing. In other words, the normal vigorous heart responds to the stimulus of increased burden by efficiently performing the added work, and in connection with the normal vasomotor mechanism by quickly reestablishing and maintaining circulatory equilibrium.

These observations are in accord with those of Crile, which directed our attention to this subject.

2. On the dog with weakened circulatory apparatus:

Conversely, we here observed that when the circulatory mechanism of the dog is weakened by any of the causes mentioned before, instead of responding to the stimulus of increased work, it is overwhelmed and shows evidence of embarrassment.

This series of experiments includes those dogs with circulatory apparatus weakened by hyperthyroidism, by prolonged ether anesthesia, by the extreme Trendelenburg position, and by intravenous injections of 0.9 per cent. sodium chlorid solution.

Our experiments on all of these dogs weakened by the foregoing conditions yielded essentially the same results.

Having taken the normal tracings for the dog in the horizontal position, we then raised it to the extreme Trendelenburg position. There followed a decided increase in arterial and venous pressure. The pressure did not return completely or quickly to the normal level for the horizontal position. The weaker the dogs were, the slower and less complete was the return.

Having been kept in the extreme Trendelenburg position for a time, they were then replaced in the horizontal position, whereupon the venous and arterial pressure returned and remained normal. Next the caudal extremity of the dog was lowered (Fowler's position). There followed a corresponding diminution in arterial and venous pressure.

In some experiments, the thorax and pericardium were opened for the purpose of examining the heart by direct inspection and palpation. It was found that when the dogs were in the extreme Trendelenburg position there was a decided increase in the venous tension, with a corresponding slight dilatation of the right auricle and great veins. Next the dog was lowered to the horizontal position, and later the caudal extremity was lowered to the Fowler position. There resulted a reduction in venous tension and tension of the right auricle corresponding to the tracings in the same positions previously obtained.

The next step was to embarrass the heart further by rapid intravenous injections of large quantity of normal salt solution into the external jugular vein. It was found that there was a marked increase in tension in the great veins and right auricle, with some dilatation of the veins and auricle, followed by increased dilatation of the right auricle, dilatation of the right ventricle and still later by dilatation of the left auricle and ventricle. After the saline injection was discontinued, if the heart was in fair condition, this added volume of salt solution was quickly distributed into the vascular tree, and the circulation returned to its normal equilibrium. On the other hand, if the heart was in poor condition, there followed arrhythmia, lowered arterial pressure and other evidences of a failing circulation. In one instance, that of a vigorous dog with normal heart which was kept for a long time in the Trendelenburg position without causing any embarrassment of the circulation, the thorax and pericardium were opened, the heart was exposed, and the ventricles were thrown into fibrillation by induced electric current. Immediately the auricle and great veins became dilated and the circulation promptly failed.

It was observed that the dogs having large thyroids and suffering from hyperthyroidism yielded more quickly and more profoundly than normal dogs to the depressive influences of posture, ether and intravenous injections of normal salt solution, etc.

TABLE 1.—COMPARATIVE MEASUREMENTS OF PREOPERATIVE AND PROSTOPERATIVE ROENTGENOGRAMS

Area	Result	Times Observed
Vascular	Increased	58
Cardiac	Increased	32
Vascular	Normal	22
Cardiac	Normal	23
Vascular	Diminished	10
Cardiac	Diminished	35

It appears to be reasonable to consider the weakened circulatory apparatus of the dog, comparable to that of the weakened circulatory apparatus of the patient suffering from the following conditions: prolonged profound anemia, hyperthyroidism, absorption of bacterial or biliary poisons, etc.

OBSERVATIONS ON THE CARDIOVASCULAR SYSTEM OF 115 PATIENTS SUBJECTED TO ABDOMINAL OPERATION

In view of the small percentage of instances in which serious central circulatory embarrassment occurred in the series of 2,100 abdominal operations, it seemed quite possible that our present series of 100 might fail to show a single instance. On the other hand, it was thought that at any rate some suggestive observations might be made. As a matter of fact, with one possible exception, there was no instance of cardiac dilatation to report in this series of observations.

One hundred and fifteen cases were studied to observe the change undergone by the cardiovascular system as a result of major abdominal operations under ether, cocain, novocain or a combination of these anesthetics.

The uniform method applied in all cases was to obtain the following data:

1. A brief history as to the occurrence of scarlet fever, diphtheria, throat infections, pneumonia, typhoid and rheumatic fever.

2. A history as to any previous cardiac condition. This save for occasional palpitation was negative in every case.

3. An examination of the blood-vessel walls.

4. Record of the rate, rhythm and quality and character of the radial pulse before and after operation.

5. The blood pressure, systolic and diastolic, pulse pressure and venous pressure before and after operation (in sixty-four of the series).

6. The dimensions of the heart to the right and left of the midline at the base of the third interspace before and after operation, determined by percussion and auscultatory percussion. It was not attempted to locate the apex, as this is too uncertain in female patients.

7. The character of the heart sounds.

TABLE 2.—INCREASE AND DECREASE IN VASCULAR AND CARDIAC DISEASES

Increased				Decreased			
Vascular Area		Cardiac Area		Vascular Area		Cardiac Area	
mm.	No. Cases	mm.	No. Cases	mm.	No. Cases	mm.	No. Cases
1	1	1	1	1	1	1	2
2	5	2	4	2	1	2	2
3	10	3	3	3	1	3	1
4	10	4	5	4	2	4	4
5	11	5	4	5	0	5	6
6	7	6	4	6	3	6	1
7	2	7	1	7	1	7	1
8	3	8	2	..	..	8	7
9	0	9	1	..	..	9	0
10	1	10	2	..	..	10	2
11	2	16	1	..	..	12	1
12	1	22	1	..	..	14	3
..	..	..	..	..	..	15	2
..	..	..	..	..	..	16	1
..	..	..	..	..	..	17	1

The study of the cardiovascular system in 115 consecutive abdominal operations failed to show any case of marked right-sided hypertension. In two instances, however, the circulation showed embarrassment consistent with an increase in venous tension, or the early stages of the condition under consideration.

One patient who showed considerable cyanosis with rapid pulse and sudden weakness on the table, though showing nothing noteworthy in her percussion outlines, gave evidence in roentgenograms of a slight diminution in the heart's transverse diameter, coincident with an increase in diameter of the great veins at their point of entry into the right auricle. There was noted also a systolic murmur at the left of the sternum lasting not more than twenty-four hours. The cause of this murmur was not determined, though it seems possible that it might have been due to a temporary change in the tricuspid ring caused by venous and right auricular dilatation.

The case with a rapid pulse twenty-four hours after operation, from 140 to 100, though giving no evidence of change in the heart's outline, showed at this period an increase of venous pressure as shown by the sluggish emptying of the vein at the hand, which had to be lifted 12 inches above the level of the heart before the vein flattened. The roentgenogram of this patient showed the transverse vascular measurement to be increased 4 mm., while the heart measurements were unchanged. Here the picture seems typical of a slight transitory increase in pressure in the right auricle and venae cavae, without, however, going to the stage of dilatation.

ROENTGENOGRAPHIC FINDINGS

From the series of 115 consecutive abdominal sections, one roentgenogram was made before operation and one or two after operation in seventy-five instances. The other forty were dropped from the list for some definite reason, as two exposures on the same plate, failure to obtain the preoperative picture, such postoperative change of position as would prevent securing pictures that could be compared with those obtained before operation, etc.

These pictures were not studied until the entire series was completed. The series of pictures of each patient was illuminated and careful measurements were made with calipers and ruler, first in the vascular area between the arch of the aorta and the heart, and secondly, the broadest part of the heart.

The preoperative measurements were considered as normal for each patient. Some of the postoperative measurements were normal, others showed a fractional increase and others a fractional decrease. In strict conformity with the clinical course and clinical measurements, none showed a marked increase in the size of the cardiac or vascular areas. Among others, the two cases mentioned before showed a moderate increase in vascular measurements. A careful analysis of roentgenographic measurements, however, is very suggestive (Table 1).

These measurements are consistent with the view that the dilatation begins in the great vein.

In this comparative table there are five duplicates in the vascular measurements and fifteen in the cardiac measurements. The duplicates occur because of a variation in measurements made on pictures taken the day of operation and those taken the next day or the second day after operation.

Maximum cardiac measurements were more often observed on pictures taken the second or third day after operation. Thus, of the thirty-two times in which the heart measurements were increased after operation, two postoperative pictures were taken twenty-six times. Of these, the second picture (that is, the one taken from forty-five to seventy-five hours after operation) showed maximum measurements seventeen times, whereas in the first picture, taken the day of operation, maximum measurements were found only five times. In four instances the measurements were unchanged.

TABLE 3.—CASES WITH NORMAL CIRCULATION IN RIGHT-SIDED HYPERTENSION WITH VASCULAR MEASUREMENTS NOT RELATIVELY GREATER THAN CARDIAC

Area		No. Cases
Vascular	Cardiac	
Increased	Increased	22
Normal	Normal	8
Normal	Increased	7
Decreased	Increased	1

When the postoperative cardiac measurements were smaller than normal, the maximum reduction was noted the day of the operation nineteen times, the day after operation seven times, and in two instances the measurements were unchanged. In seven instances only one postoperative picture was taken, making the total of thirty-five in which a cardiac reduction was noted.

An analysis of measurements shows that with few exceptions, variations were slight. Thus in the fifty-eight instances in which there was an increase of vascular measurements, the increase was 6 mm. or less in forty-four cases, and 7 mm. or over in nine. In

only four instances were the measurements increased 1 mm. or more. None of the decreased vascular measurements exceeded 7 mm.

Of the increased cardiac measurements eighteen were 6 mm. or less, while four were as follows: two, 10 mm.; one, 12 mm.; three, 14 mm.; two, 15 mm.; one, 16 mm., and one, 17 mm.

CLINICAL OBSERVATIONS ON 115 CONSECUTIVE ABDOMINAL OPERATIONS

A review of the clinical records shows that the postoperative course was perfectly smooth in seventy-six out of 115 cases, notwithstanding the fact that many who were considered poor operative risks had serious operations. The pulse in sixty-nine cases scarcely varied ten beats during the forty-eight hours. In the seven other cases, the pulse fell about forty beats, from 120 or more within the first two hours, and remained normal thereafter.

Twenty-six patients, all but one or two of whom were rather poor operative risks and yet required very serious operations, showed a rise of pulse rate to 100 or less in four instances, 112 or less in twelve instances, 120 or less in six instances and 130 four times. In all instances the pulse promptly fell to the normal (within eight or ten hours) and remained so, the further convalescence being normal.

TABLE 4.—CIRCULATORY DISTURBANCES WHEN VASCULAR MEASUREMENTS WERE RELATIVELY GREATER THAN CARDIAC

Area		No. Cases	Normal	Abnormal
Vascular	Cardiac			
Increased	Normal	16	14	2 seriously ill.
Increased	Decreased	16	15	2 seriously ill; 1 had a drop of 40 beats or more on leaving table.
Decreased	Decreased	9	4	3 seriously ill, 2 had a drop of 40 beats or more on leaving table.
Normal	Decreased	7	5	2 had a drop of 40 beats or more on leaving table.

It is thus seen that 102 of the 115 patients ran a practically normal and perfectly safe course. In the remaining thirteen instances the pathologic condition was more grave, circulatory disturbances were more marked and the postoperative condition more serious. Three of these patients died. One of these patients, a woman aged 66, with gallstones and large pancreatic abscess, died of pneumonia the eleventh day; the others died of peritonitis.

In no instance was the clinical picture of acute cardiac dilatation observed, though in one case there was decided cardiac embarrassment on the table as evidenced by cyanosis, weakness and marked acceleration of the pulse. In this case, roentgenograms immediately after operation showed increased vascular measurements but decreased cardiac measurements. The patient developed a systolic murmur which lasted one day. May she not have had a transitory tricuspid insufficiency?

A comparison of the postoperative condition of these patients and their clinical records with the Roentgen-ray findings is of some interest.

Though the typical clinical picture of marked increase in venous tension or acute cardiac dilatation was not observed in this series of 115 patients, minor changes were observed. They would seem to warrant the following conclusions as regards right-sided hypertension.

1. When the vascular measurements were not relatively greater in proportion to the cardiac measurements, there was no circulatory embarrassment. In thirty-eight cases no embarrassment was observed.

2. When the vascular measurements were relatively greater than the cardiac measurements, circulatory disturbance did occur in 24 per cent. of the cases. In fifty cases embarrassment was observed twelve times.

It is our belief that these twelve cases represent the early stages of increased venous pressure or right-sided hypertension, and that if their circulatory apparatus had been somewhat further depressed, marked hypertension and then acute dilatation would have occurred in the following sequence: right auricular and ventricular and then left auricular and ventricular dilatation. Agencies which might readily have dilated these hearts are more ether, prolonged operation, prolonged extreme Trendelenburg position, or the rapid intravenous injection of large amounts of salt solution at the time the circulatory embarrassment existed.

SUMMARY

Right-sided hypertension does occur as a postoperative complication. It is usually slight and causes no alarming symptoms. It occasionally causes circulatory disturbance, always with a rapid pulse. In rare instances it goes on to right auricular dilatation or even to dilatation of the whole heart.

It is more likely to occur when the myocardium is weakened by disease. It may readily be precipitated or intensified by excessive ether, prolonged extreme Trendelenburg position or by the rapid intravenous injection of large quantities of salt solution while the heart is already embarrassed.

It should be promptly recognized and treated by slight elevation of the head of the bed, a little morphin and cardiac stimulants.

Jenkins Arcade Building.

RESULTS OF APPLYING A QUANTITATIVE METHOD TO THE ABDERHALDEN SERUM TEST FOR CANCER *

ISAAC LEVIN, M.D.
AND
DONALD D. VAN SLYKE, PH.D.
NEW YORK

In a previous publication, one of the writers[1] reported a study of the value of the Abderhalden test for cancer, a comparative investigation with the dialysis method in cases of carcinoma, sarcoma and tuberculosis. As a substrate, carcinoma tissue was used for all the cases. Of thirteen carcinoma cases, twelve were positive and one negative; the sarcoma cases were all positive. Of twenty tuberculosis cases, nine were positive and eleven negative. The analysis of the results showed that the Abderhalden dialysis method cannot be considered as yet of real diagnostic

* From the Department of Cancer Research of the Montefiore Home and the Hospital of the Rockefeller Institute for Medical Research.
1. Levin, Isaac: Proc. New York Path. Soc., 1914, xiv, 115.

value, since it is positive in nearly 50 per cent. of non-cancerous patients.

Before further investigations could be attempted in regard to the question of the specificity of the reaction and the correctness of Abderhalden's theoretical conceptions, it seemed imperative to find a more accurate test for the detection of the ferment actions of the blood serum. Van Slyke and Vinograd[2] reported a year ago on a quantitative application of the Abderhalden serum test.

Their technic was the following: Two c.c. of serum are digested with 0.1 gm. of dried substrate (tissue prepared according to Abderhalden's directions and dried at 0.5 mm.). After the digestion is complete, 3 c.c. of water are added. The solution is then centrifuged, and 2 c.c. used for aminonitrogen determination in the apparatus of Van Slyke. Control analyses are run under the same conditions with serum that has been digested with normal tissue and without any tissue. The occurrence of proteolysis is shown and its extent measured by the increase in aminonitrogen. As the aminonitrogen is transformed into elementary nitrogen gas, which is measured in a buret, the results are both quantitative and free from subjective influence.

TABLE 1.—FIRST SERIES

No. of Case	Condition	Increase in Nitrogen Gas from 1 c.c. Serum c.c.	Dialysis Test. Ninhydrin Reaction
1	Normal	.07	.....
2	Normal	.11	.....
3	Pregnant	.24	.....
4	Pregnant	.16	.....
5	Normal	.10	.....
6	Normal	.00	.....
7	Normal	.00	.....
8	Normal	.18	.....
9	Carcinoma	.22	+
10	Carcinoma	.20	+
11	Carcinoma	.28	+
12	Carcinoma	.00	+ +
13	Carcinoma	.29	+ + +
14	Carcinoma	.22	+ + +
15	Carcinoma	.29	+ + +
16	Carcinoma	.06	.....
17	Carcinoma	.08	+ + +
18	Carcinoma	.04	+
19	Carcinoma	.01	+ + +
20	Carcinoma	.25	+ + +
21	Carcinoma	.44	+ + +
22	Carcinoma	.24	+ +
23	Carcinoma	.14	+ + +

This method undoubtedly obviates a great many of the possible errors inherent in the dialysis method, and it was therefore decided to employ it for the purpose of further investigation of the value of the Abderhalden test for the diagnosis of cancer.

In the first series (Table 1), the test was used in eight normal cases and on fifteen carcinoma patients. In all twenty-three cases the same carcinoma substrate was used. The tissue was taken from a patient with adenocarcinoma of the breast. It was prepared in accordance with the rules laid down by Abderhalden and then dried. Table 1 shows the increase in nitrogen gas from 1 c.c. of blood serum. An analysis of the table shows that, with the exception of Case 21, the increase varies over nearly the same range in the normal as in the carcinoma cases, though the average increase is somewhat greater in the carcinoma cases. In every carcinoma case a parallel test was also made by the aid of the dialysis method. The same table shows the result. The sign + means a faint color reaction, ++ a stronger and +++ a very strong reaction; 0 means a negative reaction. The dialysis results do not seem to coincide with the amount of increase in the aminonitrogen. Case 12, for example, showed no increase in the aminonitrogen, but was positive by the dialysis method.

After these results had been obtained, it was found that the accuracy of the aminonitrogen determination could be increased by removing the proteins of the serum with colloidal iron before the aminonitrogen determination was performed.

The method thus improved was employed in another series of cases. The blood serum of eight normal individuals and nine carcinoma cases was tested, using for substrate the same carcinoma tissue which was employed in the first series. Table 2 shows the result of this series. Again the increase in the nitrogen gas formation varies within the same limits in the normal as in the carcinomatous serum. In this series the average increase of nitrogen gas seems to be greater in the normal cases than in the carcinomatous. The blood serums of six carcinoma cases were also tested by the dialysis method, while in the other three cases a sufficient amount of serum could not be obtained for the double test. Here again the strength of the color reaction does not coincide with the lesser or greater quantity of nitrogen gas. Case 14 is interesting inasmuch as it was negative with both tests.

The analysis of the results of the present investigation seems to indicate that the more accurate and objective the test employed for the detection of the specific ferment reactions in the blood serum, the less difference can be detected between the reactions obtainable with normal and supposedly specific serums. The diagnostic value of the Abderhalden reaction in cancer is, therefore, to say the least, doubtful, and it must be stated very emphatically that for the present the method belongs to the research laboratory and not to the clinic.

TABLE 2.—SECOND SERIES

No. of Case	Condition	Increase in Nitrogen Gas from 2 c.c. Serum c.c.	Dialysis Test. Ninhydrin Reaction
1	Normal	.10	.....
2	Normal	.21	.....
3	Normal	.06	.....
4	Normal	.16	.....
5	Normal	.11	.....
6	Normal	.10	.....
7	Normal	.19	.....
8	Normal	.18	.....
9	Carcinoma	.10	+ + +
10	Carcinoma	.14	.....
11	Carcinoma	.05	.....
12	Carcinoma	.07	.....
13	Carcinoma	.08	+
14	Carcinoma	.00	0
15	Carcinoma	.08	+
16	Carcinoma	.13	+
17	Carcinoma	.28	+ +

2. Van Slyke, Donald D., and Vinograd, Miriam: Proc. Soc. Exper. Biol. and Med., 1914, xi, 154.

Thorough Examinations.—It may sometimes be advanced as an excuse, that the patient objected to some special examination. If the patient cannot be convinced that an examination is necessary, the case had better be relinquished, for it is better to lose a patient than to lose a reputation. The procedure of treating first and examining afterwards may lead to the unfortunate necessity of having to treat not only the disease, but the effects of your own treatment.—Adolphe Abrahams, *Practitioner*, London, March, 1915.

WOMEN IN MEDICINE

RICHARD C. CABOT, M.D.
BOSTON

American women have long since won a place in all the professions which they desire to enter. In this country there is no longer any question of women's "right" to do any work which they care for. There is no longer any serious difficulty confronting a woman who wishes to get a first-class medical education. All is smooth sailing thus far.

It is after graduation that the problems and difficulties arise. What next? No law prevents woman from occupying and cultivating any of the three great fields of medicine—medical science, medical practice and social medicine. No law, I say, but there are obstacles nevertheless, much more subtle and powerful than law. What these obstructions are I can better suggest when I have attempted a brief description of the three main groups or subdivisions which have thus far arisen within the doctor's domain.

(a) *Medical science* is the choice of those who devote themselves to investigation and teaching. It is convenient to group here also those whose medical work is done chiefly in a laboratory without any considerable contact with patients.

(b) *Medical practice* is the choice of the vast majority of our profession, and means the devotion of one's life to the care of sick people in competition with other physicians.

(c) *Social medicine* is done on salary and for the public benefit. Medical missionaries, all physicians in state and city sanatoriums for the tuberculous, college physicians, school physicians, medical inspectors of health in industry or outside it, those employed in the campaigns for "better babies," for the diminution of infant mortality, venereal disease, hookworm disease or industrial disease, physicians working in prisons, reformatories, almshouses, asylums and public hospitals, all health officers in city, county, state or nation—such workers are engaged in what I have called social medicine.

Women have proved their capacity to succeed in each of these fields. They have been successful as practitioners, in research and in social medicine. I have known women making an income of $20,000 a year in practice, and thoroughly enjoying the profession. In scientific medicine the names of Dr. Dorothy Reed, Dr. Mary W. Lawson, Dr. Florence Sabin, Dr. Maude Abbott and others are well known. In social medicine Dr. Alice Hamilton's work in industrial disease, Dr. S. Josephine Baker's in child hygiene, and Dr. Frances S. Bradley's in the United States Children's Bureau is eminently successful.

I have never felt or expressed any doubt on these points. Women certainly *can* make good in any department of medicine. But do they *wish to?* Do they like all branches of medicine equally? Do they feel the same natural zest and aptitude for them all? I think not. One branch—the practice of medicine—is hard for all of us. It is doubly hard for women because it involves competition, not on equal terms, but with an irrational handicap against them. I mean the handicap of a foolish popular prejudice. Quite unreasonable, the great majority of people (of both sexes) still prefer a mediocre man doctor to a first-rate woman doctor. As long as this is so—and I see no improvement in the last twenty years—women will not have a fair chance to get the broadest experience or to give their best service in medical practice.

Moreover women, as I see them, relish competition less than men. Many men dislike it—more women. For competition involves a struggle not only toward the best but against other people on the way. Men often like this. They get into a fight when they can; women when they must. If any one doubts this let him talk to his friends of both sexes about the great war now going on. The number of women who abhor the very idea of war is great—the number of men relatively small.

I do not think any one who has practiced medicine will deny that it involves in its competition a kind of war. The waste and irrationality of this competition from the standpoint of public health is so obvious that many of us are beginning to doubt whether competitive medicine is going to last much longer. Noncompetitive medicine, cooperative or social medicine, seems to some of us the better type. But however this may be, I believe that it is the type that most appeals to women. In social medicine there is no need to spend energy in financial worry or in distancing the other man, no considerable temptation to deceits, large or small, and no advantage in underhandedness. All one's forces can be directed straight at the end of public health.

Because this is not so in competitive medicine, I believe many women find it a disappointment and welcome the opportunity to get into scientific medicine or into social medicine on salary. Men also find medical practice a disappointment, but women more often find it so, perhaps because they are handicapped in competition by the popular prejudice against them. I need not say that I do not share this prejudice, for I have during the last twenty years done my best to help women and to get their help in medicine. But the prejudice exists and will exist for a long time. The average practicing woman physician is, I think, a better doctor than the average man physician, yet the public clings stubbornly to its belief in the superior skill and wisdom of the medical male.

What is my object in saying these things? Because I wish to direct the attention of those concerned in the medical education of women to the great and relatively new field of noncompetitive medicine for which, as I see it, women are often better fitted than men. Granted that women can equal men in any branch of medicine, is that any reason why they should not be trained—in case they prefer it—for that type of medicine in which they naturally and frequently excel men?

Is there any good reason for not having an elective course in social medicine in the colleges which give women their medical training? Ordinary medical education does not prepare one sufficiently for social medicine. The practitioner who turns to public medical service must train himself freshly for that service. Every medical school should provide opportunities to study social medicine; but this is especially the duty, I think, of medical colleges exclusively for women.

If any one thinks that I have asked women to take up the small end of medicine and have reserved the great and glorious portion for men, I can only say that I have recommended to women the type of work which I myself greatly prefer, the type to which I now give most of my time and to which I would like to give the rest of my life.

Moreover, social medicine is, I believe, the medicine of the young future, the medicine whose stock in trade is prevention, education and public service. I do not think it will attract men as much as the old competitive type now attracts them. But I believe it will be work of a higher, better kind. Why should not women prefer it? Why should they not be adequately trained for it—here and now?

1 Marlborough Street.

A CASE OF LYMPHATIC LEUKEMIA WITH APPARENT CURE

R. A. IRELAND, M.D.
CHARLESTON, W. VA.
WALTER A. BAETJER, M.D.
AND
JOHN RUHRÄH, M.D.
BALTIMORE

On Sept. 12, 1913, I was called to see a boy who had not recovered normally from a tonsillectomy done on September 6, and who had been losing weight and energy for about two months without apparent reason.

The patient was 10 years old. His father and mother were living and well. He had four brothers and one sister living and in good health. His family history was negative for syphilis and tuberculosis. He had suffered from measles, whooping cough and other minor diseases of childhood, from all of which he had made uneventful recoveries. For a few days previous to Sept. 6, 1913, he had suffered from tonsillitis. On the date last mentioned the tonsils were removed under chloroform anesthesia. For a month or more his bowels had moved two or three times daily and he had complained of almost constant pain in the abdomen. Recently his nose had bled at frequent intervals.

His mother said that in the last month his habits had greatly changed in that he wanted to be near her constantly. He was of normal build and features. His facial expression suggested bodily discomfort. His skin was bronzed enough to be quite noticeable. Nodules about the size of pigeon's eggs showed under the chin and in the axillae. Palpation revealed the presence of enlarged glands over all the body, and some of them were slightly tender. The spleen was slightly enlarged; the liver was normal. The entire abdomen was slightly tender on palpation but was otherwise normal. Other physical findings were negative. The result of an examination of his stool was negative. His blood count showed a leukocytosis of 20,000., Differential count showed, polymorphonuclears 2.5 per cent., eosinophils 0, basophils 0, small lymphocytes 67.5, large lymphocytes 30, large mononuclears 0, transitionals 0, myelocytes 0, platelets absent, red blood cells 3,000,000, hemoglobin 75 per cent. A Wassermann reaction was negative.

A diagnosis of lymphatic leukemia was made and after a consultation with Dr. G. A. MacQueen, the patient was started on 10 drops of the syrup of the iodid of iron and 1 drop of Fowler's solution three times a day. The Fowler's solution was to be increased 1 drop each second day until 10 drops were given and the rotation started again with 1 drop. In addition, Roentgen-ray exposures were made for five minutes each day. A diet of simple nutritious food was prescribed and directions given for quiet living and plenty of fresh air.

The above treatment was discontinued on Sept. 22, 1913, there being no change for the better in the patient's condition, and 0.3 gm. of neosalvarsan was given by Dr. MacQueen and repeated on September 28, and October 21.

At the time of the last injection another blood examination showed a total white count of 16,000. Differential showed polymorphonuclears 16 per cent., small lymphocytes 69 per cent., large lymphocytes 15 per cent.

The boy had gained 3 pounds in weight and his color had improved. At this time Roentgen-ray treatments were started again. On Jan. 2, 1914, another blood examination showed a total white count of 12,000; polymorphonuclears 44 per cent., small lymphocytes 43 per cent., large lymphocytes 12 per cent., eosinophils 1 per cent.

The boy played with energy and looked well. The Roentgen ray was discontinued and Fowler's solution and the iron were given for a period of two months.

On June 28, 1915, the differential leukocyte count in this case was: polymorphonuclears 37.5 per cent., eosinophils 3.5 per cent., basophils 1 per cent., small lymphocytes 37.7 per cent., large lymphocytes 15 per cent., large mononuclears 2.3 per cent., transitionals 3 per cent.

The red blood cells were normal as were also the platelets.

COMMENT BY WALTER A. BAETJER

The blood picture seen in the original smear would certainly, in my judgment, have made the diagnosis of lymphatic leukemia in an aleukemic or pseudo-aleukemic stage, provided the clinical picture was reasonably typical. There are, however, two features in the smear which are perhaps a little unusual for true leukemia. They are: first, the absence of anemia except perhaps of a slight grade; second, the fact that all of the lymphocytes are so mature and so typical morphologically and in their staining reaction. On the other hand, however, the following points certainly suggest true leukemia: first, high per cent. of lymphocytes, 97.5; second, the large number of large lymphocytes, 30 per cent.; third, complete absence of platelets.

I should personally feel that the diagnosis of lymphatic leukemia was justified in this case; although the reports of a fair number of cases of infectious mononucleosis in the past few years has made me feel a little less sure about making an absolute diagnosis in such a case than formerly.

COMMENT BY JOHN RUHRÄH

Through the courtesy of Dr. R. A. Ireland I had the pleasure of seeing this patient, examining the blood specimens taken during the illness, and of making blood specimens from him in June, 1915. In my mind there can be no doubt that the case presents a typical clinical picture of the disease which we know under the name of lymphatic leukemia and of the type of the disease usually described in the textbooks, a form that is perhaps least common of all. The blood picture is also typical of this same condition, which presents a higher degree of mononucleosis than any other known condition. In the specimen which I examined there were 97.5 per cent. of mononuclear cells. In my experience in the diseases of childhood I have never seen that degree of mononucleosis in any condition other than leukemia.

Turck, Cabot, Jackson, and others have described cases in which, during or following infections about the throat, there was more or less general enlargement of the lymph nodes together with an increase in the number of lymphocytes. Similar blood findings have been described in cases of streptococcus infection due to wound sepsis, in furunculosis, in widespread streptococcus adenitis of tonsillar origin. Some of these cases have also been described following septic sore throat. In Cabot's cases the leukocytes did not exceed 71 per cent. His cases were in adults. In Jackson's remarkable case occurring in a college student 21 years of age, following a sore throat and slight enlargement of the lymph nodes of the neck,

the blood count showed, white blood cells, 40,000; small lymphocytes, 36; large lymphocytes, 59; polynuclears, 5; basophils, 0; eosinophils, 0.

This patient had had typhoid in 1907 and in 1909 had his spleen removed due to rupture caused by a coasting accident. The blood picture following removal of the spleen was normal. This patient's blood became progressively better and in two months after the onset was practically normal and has remained so at the time of his report.

The differential diagnosis between an acute leukemia and lymphocytosis due to infections may be exceedingly difficult. Cabot would base it on the lesser degree of lymphocytosis, on the course of the disease and the recognition of an infectious origin of the adenitis. To these may be added the amount of change in the red blood cells and whether or not there is hemolysis.

Whether or not the patient, who has had a practically normal blood count for two years, can be regarded as cured is open to question and it would seem to me perhaps safer to allow a somewhat longer period to intervene before speaking dogmatically on this subject. Nevertheless this case of Dr. Ireland's is, so far as my knowledge of the literature goes, unique, presenting a higher degree of mononucleosis with a return to normal or more nearly normal than in any other case that has been described. It may be noted that the patient at the time of the last blood examination presented a higher percentage of lymphocytes than is usually seen at 12 years of age. The cure in this case may have been due to the neosalvarsan, as it seems that the improvement took place after it had been administered and when the case had shown no definite reaction to the Roentgen-ray therapy. In any other instances with which I am familiar in which salvarsan has been administered, it has been without effect so far as the eventual outcome is concerned. The same may be stated to be true of Roentgen-ray therapy.

In spite of the small number of cases of leukemia reported in children, I am inclined to believe that the disease is not so infrequent as is thought. There can be no doubt that many cases, particularly in the very young, are overlooked usually because leukemia is not borne in mind as one of the possibilities. When the disease presents a typical picture with general enlargement of the lymph nodes it has probably not escaped diagnosis, but in the acute febrile forms the disease may easily be mistaken for typhoid or paratyphoid if the blood is not examined; the ulcerative stomatitis cases may be mistaken for malignant diphtheria or scurvy or for stomatitis; and the hemorrhagic form for scurvy, purpura, or some severe infection with hemorrhage. I have mentioned only the most likely possibilities. It should be borne in mind that the disease may occur at any age and has been reported in children as young as 16 days. It should also be remembered that it may be exceedingly acute, four and a half days being the shortest period from onset of symptoms until death, or the disease may last for weeks or months.

It is to be hoped that the report of this very unusual case will stimulate others to report single cases of leukemia in children, with particular reference to therapeutic procedure, as our knowledge of this subject is at present exceedingly unsatisfactory.

It may not be out of place to urge the more frequent use of differential counts especially when, for any reason, the examination must be limited. A differential count will give more definite information than any other single procedure of the examination of the blood and may be supplemented with further investigation if deemed necessary.

EPIDIDYMOTOMY: A NEW OPERATION

E. P. MERRITT, M.D.

Instructor in Genito-Urinary Surgery, Atlanta Medical College, Medical Department of Emory University; Urologist to the Atlanta Antituberculosis and Visiting Nurses Association

ATLANTA, GA.

The ineffectiveness of conservative therapeutic measures for the symptomatic relief and abridgment of the course of gonorrheal epididymitis has led to the employment of more radical and direct means of securing these ends.

Hagner in 1908, and others following him, described operations of epididymotomy which to my mind are unnecessarily extensive to attain the desired object. During the last three years, in the treatment of seventy-five cases of gonorrheal epididymitis, I have followed out a procedure which appears to overcome the objections to previous methods, and to be uniformly satisfactory and effective.

The method is as follows:

The site is prepared as for any surgical operation on the scrotum. The scrotum is grasped on the affected side, as much gentleness being used as is consistent with firmness. Three per cent. iodin is applied to the field. A 1 per cent. solution of cocain is injected at the lower part of the scrotum, anesthetizing the skin from one-half to one inch in length. Then the needle is pushed straight down, and a few drops distributed in the globus minor. With a sharp-pointed bistoury, an incision is made along the anesthetized line in the scrotum, and then with care the point of the knife is advanced into the globus minor, and several stabs or punctures are made. A blunt-pointed probe is then pushed along the tracks of the knife, and blind avenues opened up. The wound is then packed with 5 per cent. iodoform gauze. No sutures are required. A plain gauze dressing is applied, and the scrotum kept well supported.

By this operation, free drainage is secured by incision at the most dependent point. Whether or not pus is present, tension is relieved, and thus the most prompt and gratifying relief of pain and discomfort is obtained. It can be performed under local anesthesia with entire satisfaction at one's office or at the clinic. The incision is much smaller than in other operations of epididymotomy. It greatly shortens the duration of the disease and the consequent detention from business, and therefore is of economic value. It is devoid of risk. The technic is extremely simple, and any one with the most casual surgical experience is capable of performing it.

924-926 Candler Building.

Oysters in Interstate Commerce.—Oysters now being shipped from northern oyster beds in interstate commerce are safer than ever before, being as safe a food as milk. This condition has been brought about through the sanitary surveys of oyster beds conducted cooperatively by the Public Health Service and the Department of Agriculture, by the hearty cooperation of the state shellfish authorities with the federal authorities, and finally by a realization on the part of the oyster men that they themselves, in the interests of their industry, must prevent the taking of oysters from suspected or polluted beds.—*Bull. U. S. Dept. Agriculture.*

TUBERCULOSIS OF THE UTERINE APPENDAGES*

HOWARD CANNING TAYLOR, M.D.
NEW YORK

CAUSES

General: Tuberculosis of the uterine appendages is usually secondary to a tuberculous infection in another organ. It can be stated, therefore, that anything that predisposes to tuberculosis in general, predisposes to tuberculosis of the genital organs. This may be family disposition, mode of living, race, etc.

Predisposing: Previous gonorrheal infection of the fallopian tubes is claimed to be a predisposing cause of tuberculous salpingitis. In other organs a simple inflammation doubtless predisposes to a tuberculous infection. In the joints, lungs, pleura and elsewhere a simple inflammation frequently precedes a tuberculous infection, and by analogy it can be assumed that the same is true in the appendages. It is unusual to find gonococci in tuberculous appendages, but this does not prove that they may not have been present at the beginning of the process. That gonorrheal infection does not always precede the tuberculous infection is proved by the frequency of the latter in virgins. It is probable that any other inflammation of the appendages, such, for example, as might result from an abortion or childbirth would predispose to a tuberculous infection in the same way.

If it is true that in many cases of tuberculosis of the uterine appendages the infection reaches the tube by direct extension, either from the peritoneum or from the uterine cavity, then a moderate infection would be more frequently followed by a tuberculous process than the more extensive infection leading to occlusion of the uterine and fimbriated ends of the tubes. It is probable even after both ends of the tube have been occluded that the tuberculous infection can occur either through the lymphatic or blood supply, but it is less likely to result from a direct extension. A tuberculous infection on a hydrosalpinx has been reported. Even though the appendages are occluded, the peritoneal coats may be involved by extension in a general peritoneal tuberculosis.

Congenital deformities and malformation of the appendages predispose to tuberculous infection, according to Sellheim, Freund and other authors. In this class would be included cases of infantile uterus. A number of observers have called attention to the frequency with which an abnormally small uterus is found in cases of tuberculosis of the fallopian tubes.

The puerperal uterus is more likely to become infected with tubercle bacilli than the normal uterus. It has been found that the placental site is more frequently infected than other parts of the uterine cavity. From the uterine tuberculosis the appendages may become secondarily infected. In this indirect way, pregnancies would predispose to tuberculous salpingitis.

Ovarian cysts are sometimes found to have a tuberculous infection implanted on the new growth. I have seen one case in which a fibroma of the uterus was involved in a tuberculous process. It is not probable, however, that either ovarian cysts or uterine fibromas should be considered to be predisposing causes of genital tuberculosis.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

FREQUENCY

The frequency with which tuberculosis is found in the uterine appendages depends largely on the regularity with which these organs are subjected to a microscopic examination. If the nature of the process is determined only by the gross examination, the number of cases of tubal tuberculosis reported will be small; if, however, every tube and ovary that is removed is examined microscopically, the number will be found to be surprisingly large. It is probable also that the frequency of genital tuberculosis, as tuberculosis of other organs, varies in different locations and among different people. If gonorrheal salpingitis predisposes to tuberculous salpingitis, as it probably does, then naturally tubal tuberculosis will be found more frequently among the class most frequently subject to the former disease.

Krönig, in a series of 400 appendages removed for chronic inflammation, found tuberculosis in 11.5 per cent. of the cases. If in the series, there were also included the cases in which there was a general tuberculous peritonitis with the involvement of the tubes only on the peritoneal coat, there would have been 22 per cent. of tuberculosis. It is probable, as has been suggested, that the actual number is still larger, because in some old healed cases, the tuberculosis might have been overlooked.

Studdiford found tuberculosis in 6 per cent. of tubes removed for inflammatory conditions.

In my own cases tuberculosis was found by routine examination in 5 per cent. of tubes removed for inflammatory conditions. This represented about 2 per cent. of all abdominal operations.

While statistics of different clinics vary, it is probable that at least 10 per cent. of all inflammatory diseases of the uterine appendages are of tuberculous origin.

The ovary is affected by tuberculosis less frequently than the fallopian tube. It is not possible to give the ratio of frequency with which the two organs are affected. Tuberculosis of the ovary cannot always be detected by macroscopic examination, and frequently the ovary, if apparently not diseased, is not removed with the tube.

As the ovary is most frequently involved by extension from the fallopian tube, the stage of the disease at which the cases are examined would modify the ratio of frequency. This would be seen particularly in comparing operative and necropsy cases. In the late necropsy cases, the ovary would be more frequently involved with the tube than in the earlier operative cases. Different observers estimate that the ovary was jointly involved in 10 to 60 per cent. of cases of tuberculosis of the tubes. In my own cases, the ovaries were involved in 22 per cent. of the cases.

Tuberculosis of the ovary without involvement of the tube is exceedingly rare. No such case is reported among my cases.

The extension of the tuberculosis process from the tube to the uterus is of frequent occurrence. Simmons, as reported by Krönig, found the combination of uterine and tubal tuberculosis in 52, or 65 per cent. of 80 necropsies for genital tuberculosis. This does not mean that in all of these cases, the tuberculous process extended from the tube to the uterus. In a certain number, doubtless the tuberculosis existed first in the uterus and later extended to the tube. Kroenig believes that the combination occurs in about one-half

of all cases of genital tuberculosis. This fact is an indication for the removal of the uterus if the appendages are removed for tuberculosis.

SOURCES OF INFECTION

There are three modes of infection in genital tuberculosis. They are: (1) through the blood and lymphatic systems; (2) from neighboring organs; (3) by ascending infection through the vagina.

1. Through the blood and lymphatic systems from a tuberculous focus elsewhere, undoubtedly the greatest number of cases occur. The primary focus is most frequently in the lungs, but may be in any of the other organs. The importance of this mode of infection is illustrated by the claim of some observers that no case of undoubted primary tuberculosis of the uterine appendages occurs in the literature.

2. From neighboring organs the uterine appendages are frequently infected by a tuberculosis process. This most frequently occurs from the peritoneum. Frequently the involvement of the peritoneum and the abdominal organs including the uterus and appendages is so general that it is not possible to determine in which place the disease had its origin. That is, whether the tuberculosis started in the appendages and extended from them to the peritoneum, or whether it started in the peritoneum and involved the appendages secondarily. Most observers believe that the peritoneum is the site of the primary lesion.

Kraus reported a case of tuberculosis of the right uterine appendage in which the infection apparently extended from a tuberculous appendix to the fallopian tube. I recently had under my care a persistent sinus following the removal of the appendix. At the operation, I removed a tuberculous pyosalpinx from the bottom of this sinus. I have been unable to learn from the previous operator the exact nature of the original trouble in the appendix.

3. By ascending infection is meant the involvement of the uterus and appendages from infection introduced into the vagina. It has been questioned that tuberculosis of the uterus or of the uterine appendages can result from tubercle bacilli introduced from without into the vagina. In general there are two methods by which tubercle bacilli may be introduced into the vagina — one by coitus with a man with tuberculosis of the testes or seminal tracts, and the other by fingers, soiled instruments, linen, etc., of a person infected with tuberculosis. Against this mode of infection, it has been stated that the tubercle bacilli are destroyed by the vaginal secretions. Also that even if they were deposited in the vagina and remained alive, they could not gain entrance into the uterus and certainly not into the fallopian tubes.

Menge does not accept these views. By mixing vaginal secretions with a solution of tubercle bacilli under conditions resembling those in the vagina, he found that the bacilli were killed. If, however, the solution was diluted, the bacilli remained alive for a number of days. Menge considered this proof that tubercle bacilli in the semen would be protected from the action of the vaginal secretions by dilution. He also believes that the motion of the spermatozoa is sufficient to carry the tubercle bacilli into the uterus and even into the tubes.

Menge also experimentally produced tuberculosis of the uterus in guinea-pigs by injecting a solution containing tubercle bacilli into the seminal vesicles of the male before intercourse.

Bennecke, experimenting on rabbits, was also able to produce tuberculosis of the genital tract by ascending infection.

These experiments of Menge, Bennecke and others would seem to prove that it is possible that infection of the genital tract by tubercle bacilli introduced into the vagina during intercourse is certainly possible. It is, however, doubtful that it is of frequent occurrence. On the other side Blau (quoted by Bennecke) and Sugimura were unable to produce a genital tuberculosis by ascending infection and doubted its occurrence. Krönig believes that an ascending infection from the vagina probably never occurs.

PROGNOSIS

Indication for Operation: Tuberculosis of the uterine appendages is ordinarily a secondary infection. In nearly every case there is elsewhere in the body one or more tuberculous foci; that is, the genital tuberculosis is a part of a more or less general systemic infection.

In order properly to consider the treatment it is necessary to understand the influence which the tuberculous salpingitis exerts in this general process (1) on the life of the patient, (2) on the health of the patient and (3) on the extension of the infection.

The influence of the tuberculous salpingitis on the life of the patient is comparable to that of other forms of salpingitis. Tuberculous salpingitis is rarely the direct cause of death, neither are other forms of salpingitis. In 64 cases of genital tuberculosis found at necropsy in the pathologic laboratory at Freiburg, the genital tuberculosis was not considered the cause of death in any case. This confirms our clinical experience. Very rarely does a tuberculous salpingitis alone seem to be the cause of death. Theoretically we would not expect it to be. The tubes and ovaries are not necessary to life, and their destruction does not in itself materially affect the health of the patient. It is probable, therefore, that it is rarely necessary to operate in a case of tuberculous salpingitis in order to save the life of the patient.

A more difficult problem is to estimate the tendency which the tuberculosis in the appendages has to extend locally or to produce a general systemic infection. There is no doubt that many cases of tuberculous salpingitis subside and are found only at operations for other conditions or at necropsy. That is, that there are healed tuberculous lesions in the tubes and ovaries as in other organs.

The frequency with which a tuberculous salpingitis produces a general peritoneal tuberculosis is still in dispute. Some observers believe that it is the usual rule that the peritoneal infection is from the tube and advocate the removal of the uterus and both appendages for tuberculous salpingitis to prevent the occurrence of tuberculous peritonitis.

The weight of evidence is against this extension. It is probable that a tuberculous inflammation in the tube would cause the formation of adhesions about it in the same way as other types of salpingitis. These adhesions would tend to localize the infection and prevent the general peritoneal tuberculosis. As is known there is a tendency for any minute foreign body in the peritoneal cavity to be carried into the lumen of the tube in the same way that the ova may be. It is possible that the tuberculous infection can be carried in the same way into the tube. Theoretically,

therefore, we would expect the tube to be infected from the peritoneum and not the general peritoneal cavity from the tube.

There is ample clinical evidence that an active tuberculous salpingitis does not always infect the peritoneum. Frequently one tube is removed for an inflammatory condition, and the other, diseased to a less extent, is not removed. A microscopic examination proved the excised tube to be tuberculous. It is a fair assumption that the inflammation of the tube that was not removed was of the same nature. In their subsequent course these cases rarely show any signs of a tuberculous peritonitis. Krönig reported twelve consecutive cases of this kind, in none of which apparently did the peritoneum become infected. He believes that the tuberculosis rarely extends from the tube to cause a general peritoneal tuberculosis.

The frequency with which healed tuberculous lesions are found in the tubes with apparently normal peritoneum is additional evidence that tuberculosis of the tubes does not usually extend to the peritoneum.

The frequency of the extension of a tuberculosis of the tubes and ovaries to bladder and intestines is also difficult to determine. Krönig holds that it infrequently extends to these organs and rarely is the starting point of a general miliary tuberculosis. In none of my cases were the intestines or bladder apparently involved. There certainly were no fistulas. Other observers, for example Menge, believe that there is a strong tendency to both local and general extension.

Krönig, believing that tuberculous salpingitis rarely extends, disapproves of operation to prevent such occurrences. Menge, holding the opposite view, operates far more frequently on cases of tuberculous salpingitis.

Practically there is no absolute rule regarding operation for tuberculous salpingitis to prevent a local or general extension. Some cases will remain quiescent or subside, others will progress. If by proper treatment the symptoms subside and the infection is not extending, I prefer to delay operation. If the disease is progressing then an operation is indicated.

The influence of a tuberculous salpingitis on the general health in itself is usually not great. The disease usually runs a chronic course and frequently gives no local or general symptoms. In other cases, it runs a chronic course without local or general symptoms excepting during acute exacerbations. In other cases the symptoms may be constant and possibly severe. In other words, with regard to symptoms, tuberculous salpingitis follows closely a salpingitis from other causes, and has in general the same indications for operation.

The ultimate value of the tube must also be considered in deciding on the treatment of tuberculous salpingitis. It is theoretically possible for a tuberculous salpingitis to subside, leaving a patent tube and allowing the patient to become pregnant. It is doubtful if this often occurs. Furthermore, it is doubtful if it is wise that such a patient should become pregnant for fear of starting again the tuberculous process. There is, therefore, no indication to delay an operation otherwise indicated in order to conserve the tube.

TREATMENT

The treatment of tuberculous peritonitis is not properly included in this paper, and it will be considered only as it is necessary to do so in describing the treatment of tuberculous salpingitis.

The treatment of tuberculous salpingitis will be considered under two classes: (1) those cases in which the tube is involved as a part of the general peritoneal tuberculosis and (2) those cases in which there is only a local peritoneal involvement.

If there is a general peritoneal tuberculosis, that and not the salpingitis is the condition that determines the treatment. If, however, the abdomen is opened for such a condition, usually the tubes, if accessible, should be removed. The chances of the tubes becoming diseased from the peritoneum is so great and the chances of regaining their function so small that they should not be retained. If inaccessible they should not be removed unless they are distended, because the additional peritoneal traumatism necessitated by the removal of the tubes would increase the chances of infection. If the tubes are distended, it is usually best to remove them even if covered by adhesions.

The treatment of the uterus and ovaries depends on their condition and the case. At or approaching the menopause, they should be removed. If the ovaries are diseased they should be removed. If the ovaries are removed the uterus should be also.

If there is no general peritoneal tuberculosis, the treatment of the tuberculous salpingitis is practically the same as for other forms of salpingitis. This is true because if there is no general peritoneal tuberculosis, it is practically impossible to diagnose a tuberculous salpingitis from other varieties.

During the acute stage, or during an acute exacerbation, there should be rest in bed, local applications of ice, proper diet, air, etc. Later there should be local treatment and especial attention to general health. There is no doubt that in this way many cases are completely and permanently cured symptomatically without the diagnosis of tuberculous infection being made or suspected.

After the acute symptoms have subsided, if a distended tube, that is, a tuberculous pyosalpinx remains, or if the acute symptoms are too frequently repeated, then an operation is indicated. The indications for operation are practically the same as for other forms of salpingitis.

At the operation no attempt should be made to save any part of either tube. Usually (90 per cent. of cases) both tubes are involved.

If the ovaries are diseased, or if the patient is near the menopause, the ovaries should be removed.

If the ovaries are removed or if the patient is near the menopause, the uterus should also be removed. It is difficult to decide regarding the uterus in young women with normal ovaries. It has been stated that 50 per cent. of cases of tuberculous salpingitis are associated with tuberculosis of the fundus uteri. There is some risk in not removing this tuberculous focus if it is present. There is also a definite risk of mental and physical discomfort if the ovaries and uterus are removed in young women.

I have not removed the uterus in a number of these cases (often the diagnosis of a tuberculous salpingitis was made only by the microscopic examination) and in no known case has there been subsequent trouble.

The postoperative treatment of tuberculous salpingitis is important. The probability of other tuberculous foci, and the personal predisposition of the patient are indications for the best hygienic surroundings with regard to rest, food, air, etc.

32 West Fiftieth Street.

ABSTRACT OF DISCUSSION

DR. PHILEMON E. TRUESDALE, Fall River, Mass.: The study of any obscure disease is always interesting. Tubal tuberculosis is not only clinically obscure, but its true pathology is occasionally overlooked when the lesion is in plain sight. The affected tubes, particularly in the early stages, have certain characteristics which may be well to mention. In the first place, the original focus is always in the ampulla of the tube. As this develops, the process goes on toward the uterine end of the tube in the production of small nodes, invading the stroma of the tube. There is a more or less characteristic appearance of the fimbriated extremity. The fimbriae are short, thick and have a rosette appearance. Until the tube becomes extensively involved and adherent to surrounding structures, the distal end remains patent and presents often this characteristic appearance.

Dr. Taylor has allowed a very liberal latitude for other views. His observations, however, are based on a large experience and are strengthened by the opinions of the master gynecologist, Krönig. They would, therefore, undeniably, be the truest guides. I have held a belief that tuberculous peritonitis is often the manifestation of a primary focus in the tube. This belief is founded on the experiments of Murphy, the clinical experience of the Mayos, and my own more limited observations. Murphy injected tuberculous material into the free peritoneal cavity of the monkey. This gravitated to the floor of the pelvis and produced a peritonitis. In no case was the stroma of the tubes involved. Dr. Mayo reported seven cases in which the patients had been operated on from one to four times, in which he cleared up the peritonitis by removing the tubes. In a few cases we have found tuberculosis in the tubes and a peritonitis somewhat circumscribed, indicating an extension by continuity. One of these patients I operated on for what appeared to be a chronic appendicitis. At the operation there was a little free fluid, which did not appear to be consistent with the process in the appendix. On further examination the terminal end of the ileum was found studded with small tubercles and both tubes were tuberculous. The tuberculous peritonitis in this case was limited to the peritoneum of the pelvis. However, the value of this discussion rests in the fact that the fallopian tubes should always be examined when the abdomen is opened for tuberculous peritonitis.

In some of the more advanced cases it seems to me well to mention the importance of not doing anything surgically. Dr. Taylor has mentioned the fact that the disease rarely, if ever, is the cause of death, while it is limited to the pelvis. Occasionally, the picture at operation is a fused mass with adhesions extensively involving the intestine. Great danger of fistulae and of miliary tuberculosis here accompanies the removal of the disease. So it seems to me to be the part of wisdom occasionally not to proceed with any surgical interference.

I believe that gauze drains should not be used in these cases, except as a temporary expedient to control hemorrhage. Rubber tissue answers the purpose fully and should be employed when any drain is necessary. When the question of drainage is in doubt, I should be inclined to take the risk against the use of any drain.

DR. J. E. ENGSTAD, Minneapolis: Dr. Taylor did not mention the bovine and human types of tubercle bacilli. I believe that the tuberculous infection in the peritoneal cavity is due to the bovine type. Both types may exist in the human simultaneously. I believe that in most cases the infection is hematogenous, the primary foci being in the lungs, in the cervical glands or elsewhere. Infection of the uterine appendages is often due to a primary infection of the appendix. In a large number of cases of chronic appendicitis the causative factor is tubercle bacilli, generally of the bovine type. In regard to adhesions, I have found in many cases of violent infection of the peritoneum an exudate which prevents adhesion or agglutination. I would lay stress on the culture test at the time of operation to prove whether the tuberculous infection is due to bovine or the human type.

DR. C. L. HALL, Kansas City, Mo.: I do not arise so much to discuss the paper as to emphasize the point made by Dr. Truesdale in the discussion in regard to drainage, which, if it is in order, I would say applies to all abdominal drainage. It is now many years since I have introduced gauze of any description into the peritoneal cavity, and I find simply the folding of a part of a rubber glove or a soft rubber tissue so as to make a vent in the abdomen answers every purpose. Anything else becames a stench and a disagreeable feature. I introduce rubber tubage, soft as a rubber glove, and it will answer the results. I feel if the vent is made in the abdomen the natural peristalsis of the bowel—the breathing and extension of the diaphragm—will promote drainage.

DR. E. E. MONTGOMERY, Philadelphia: I should like to emphasize the importance of microscopic investigation of all specimens removed. We are not able to determine, in cases of this character, what the pathogenic condition is unless such an investigation has been made, and it will reveal, not infrequently, that tuberculosis or other conditions existed when they were unsuspected. Four years ago, at the Los Angeles meeting I reported a case in which I had removed a mass from one side about the size of a walnut, and which was supposed at the time to be a fibroid of the fallopian tube. Investigation proved it to be a carcinoma. Remembering the opposite tube was somewhat enlarged at the time of operation, I immediately reopened this woman and removed the uterus and its other appendage. The investigation of the other tube disclosed tuberculosis; so that we had in the patient a malignant disease on one side and a tuberculous disease on the other. Extension of inflammation from the peritoneum to the tube, even though it may be closed, I think is possible.

In a patient on whom I operated some years ago, and removed fibroid growths, a tuberculous peritonitis was found on the left side of the pelvis. Good health followed for some time, when she developed distress in the bladder and was treated quite awhile for cystitis, for which she again came under observation. I found a thickening of the side of the pelvis which, from its situation, was evidently the ureter. Later I removed the left kidney and its ureter for extensive tuberculous degeneration of the kidney and the entire ureter which I attributed to the previous infection extending from the involved peritoneum. With regard to the removal of such a mass, in my judgment, it is quite important that the tube should be removed in patients in whom we recognize a tuberculous condition existing, even though the tube may be open, because of the possibility of extension of such inflammation; the fact that the patient has a tuberculous disease makes it less desirable in her case that she should give birth to progeny than an individual in good health; so, it would seem wise in cases of tuberculous infection of the ovaries that they should be removed.

DR. S. M. D. CLARK, New Orleans: Dr. Taylor touched a very significant point when he referred to the importance of routine examination of specimens. Five or six years ago, I recall when my specimens were sent to the general pathologic department that the percentage of tuberculosis in these cases was not as high as usually found in other clinics. Since adopting the dual method of not only using the regular pathologic service, but in addition employing one especially interested in pelvic pathology, the finding of tuberculosis has notably increased and the percentage has materially risen. I have always looked on the tubes and appendix as having a selective affinity for tuberculosis, and in the great bulk of cases the primary abdominal focus was in these structures. The splendid work in this field of Murphy and Mayo is most striking; therefore, when dealing with tuberculous peritonitis, the first regions to be explored are the tubes and appendix, believing that in their removal a larger percentage of cures will follow. For the past eight months when finding a tuberculous endometrium, I have removed the tubes only and find that the endometrium returns to normal, proving that in nearly all cases the disease of the endometrium is secondary to the tubal disease.

Dr. Howard C. Taylor, New York: It is practically impossible to determine in any case whether the tube or the peritoneum was primarily affected. The cases reported by Krönig, in which one tube after removal was demonstrated microscopically to be tuberculous, and in which the remaining tube was probably tuberculous, demonstrates that a tuberculous peritonitis certainly does not always follow a tuberculous salpingitis. Conversely, the fact that tuberculous salpingitis is usually bilateral is in favor of the salpingitis being secondary to a peritonitis and not the result of a hematogenous infection. I am glad so many have spoken of the necessity of examining every tube removed. It has become more or less common if a woman shortly after marriage starts up an inflammatory condition in the pelvis, at once to draw the conclusion that there is a gonorrheal infection. I think that this is not correct, and that the true explanation is that there is an acute exacerbation of an old tuberculous lesion.

LEUKEMIA—REPORT OF TWO CASES

Carl R. Steinke, M.D., Philadelphia

Case 1.—A. N. C., a white merchant, aged 54, married, had negative family and previous medical histories. The patient has one daughter, who is healthy. He was first seen Feb. 23, 1913, complaining of pain in the cardiac and left hypochondriac regions and at times in the lower abdomen. His present trouble began one and one-half to two years previous and he had lost 20 pounds in the preceding six months.

Physical Examination.—Skin and mucous membranes were pale; the thorax negative. The liver extended from the sixth rib to two finger breadths below the costal margin. The kidneys were not palpable. The spleen extended from the ninth rib to 1 inch above the iliac crest with sharp anterior border in the midclavicular line. The inguinal and axillary glands were palpable; no epitrochlear or postcervical glands could be felt. The musculature was flabby.

Urine: 35 ounces in twenty-four hours, was normal. Blood: red cells 3,725,000; hemoglobin 75 per cent.; leukocytes 179,480 with differential count of 70 per cent. polymorphonuclears, 20.3 per cent. myelocytes, 5 per cent. transitionals, 3.6 per cent. lymphocytes, 1 per cent. eosinophils, 1.6 nucleated reds to 100 leukocytes. No treatment was taken until Sept. 27, 1913, when the liver dulness was about as before, while the spleen extended well into the left iliac fossa and to the left nipple line anteriorly.

Treatment and Sequence.—Fowler's solution was given, running up to 12 minims three times a day, with no effect after several weeks' trial. Roentgen-ray treatment three times a week began Jan. 28, 1914. On February 9 he noticed severe pain down the right thigh and leg, nocturnal in character and most marked between 2 and 4 a. m. Nervous and rectal examinations revealed nothing abnormal. By March 30, after eighteen Roentgen-ray treatments, the spleen was considerably reduced in size. He discontinued treatment for two weeks and on return the spleen was larger than ever and his general condition much worse, thus showing the necessity of continuous treatment. Previously the various long bones as well as the spleen had been exposed to the Roentgen ray and Dr. Newcomet decided to expose only the spleen, focusing from various angles. On May 26 the blood count was: red cells 3,990,000; hemoglobin 70 per cent.; leukocytes 211,800; differential count, polymorphonuclears 49.38, myelocytes 20.5, basophils 19.62, large mononuclears 5.3, transitionals 2.1, eosinophils 1.8, lymphocytes 1.3. After forty-one Roentgen-ray treatments together with six weeks of benzol (benzene C_6H_6), the blood count improved as shown in the accompanying table. His temperature ranged between 100 and 103 F. and the pulse averaged about 80. From the middle of June the patient failed more rapidly. July 6 the urine showed a trace of albumin and many granular casts. The blood count was: red cells 3,030,000; hemoglobin 44 per cent.; leukocytes 295,000; polymorphonuclears 28.5, large mononuclears 63, myelocytes 7.5, transitionals 0.5, basophils 0.5; nucleated reds present. Death occurred July 12, 1914, of respiratory failure. The great increase of large mononuclears toward the end of life has been observed by others.

Necropsy at the Presbyterian Hospital gave the characteristic features of splenomyelogenous leukemia, but there was no local cause found for the pain down the right limb.

Case 2 is reported by courtesy of Dr. M. H. Fussell from his service at the Episcopal Hospital.

Case 2.—Acute lymphatic leukemia: F. U., white, aged 11, had negative family and previous medical histories. No pneumonic history was obtainable. He complained of cough, shortness of breath and a "swollen" chest. He began feeling ill two weeks before admission.

Physical Examination.—This showed a well-developed, well-nourished boy with swollen face, enlarged tonsils, coated tongue, enlarged cervical nodes. Thorax expansion was good on the left but much diminished on the right, where the enlargement, which did not pit on pressure, appeared. The veins over the anterior chest were numerous and dilated (telangiectasis.) The right chest had signs of fluid and 2 c.c. of thin pus were aspirated which gave a negative bacterial smear and culture, while the leukocytes (mostly lymphocytes) were too numerous to count. On the left side the breath sounds were exaggerated, vocal fremitus increased, but there were no râles or friction sounds. The heart was negative. The liver was not enlarged and the spleen not palpable. The extremities were negative. The leukocyte count was 12,160, polymorphonuclears 70 per cent., lymphocytes 22 per cent., mononuclears 5 per cent., transitionals 2 per cent., eosinophils 1 per cent. A roentgenogram of the chest was negative for empyema. Urine: amber, specific gravity, 1.025, acid, contained no sugar, albumin or sediment. Epithelial cells and urates were present, and a few leukocytes, but no red blood cells or casts. The temperature ranged from 98 to 100 F. By August 20 the liver dulness extended from the fifth rib to 1½ inches below the umbilicus in the midaxillary line and the spleen was easily palpable. The abdomen was rigid but not tender. The inguinal nodes were enlarging. Expectoration was bloody and gums bleeding. Fowler's solution, 5 minims three times a day, was given and Roentgen-ray treatments were started.

BLOOD COUNT AND TREATMENT IN CASE 1

Date	Hb %	R. B. C.	W. B. C.	Myelocytes, %	Treatment
2/24/13	75	3,725,000	179,480	20.3	None
9/27/13	73	.....	204,880	20	Fowler's solution
1/28/14	..	.....	240,000	....	Roentgen ray started
2/30/14	80	.....	164,000	....	Benzol given five days
5/ 5/14	..	.....	.....	....	Benzol started again
5/26/14	70	3,990,000	211,800	20.5	
6/12/14	..	.....	.....	....	Benzol stopped
7/ 0.14	44	3,030,000	295,000	7.5	

August 26 the blood count was: reds 4,980,000, hemoglobin 82 per cent., leukocytes 67,500.

August 29: leukocytes 256,800, lymphocytes 93 per cent., polymorphonuclears 6 per cent., eosinophils 1 per cent. His condition rapidly grew worse so that by September 1 the following special features of his condition were noted: He had an anxious expression, his face was puffy, he had marked dyspnea, petechiae on inner side of feet and bluish discoloration of soles, spine bowed anteriorly, discrete enlargement of submaxillary, epitrochlear, and axillary nodes on both sides, inguinal nodes palpable. The right chest gave signs of fluid, with the apex beat in midaxillary line. There was a large mass in the upper abdomen, probably the spleen or liver, as the two could not be differentiated. One and a half pints of bloody serous fluid were aspirated from the right chest and it was still flowing when violent coughing necessitated the withdrawal of the needle. Laboratory report on the fluid gave 10,000 red blood cells and 160,000 white blood cells with a differential count of 98 per cent. lymphocytes and 2 per cent. polymorphonuclears. A smear showed a few diplo-

cocci, but the culture was negative and no tubercle bacilli were in the fluid (guinea-pig test made). The blood count was: red cells 3,000,000, leukocytes 215,000, small lymphocytes 90 per cent. and polymorphonuclears 10 per cent. The gums oozed freely. The patient died suddenly at 6 a. m., Sept. 3, 1914. Unfortunately no necropsy was obtained.

The case conforms to R. C. Cabot's[1] description of acute lymphatic leukemia. In the cases reported by Drs. Fussell, Jopson and Taylor,[2] a number showed an increase in the percentage as well as the actual number of small lymphocytes.

Treatment.—The Roentgen-ray and benzol (7 minims in 7 minims of olive oil in capsule three times a day) treatment in this case of splenomyelogenous leukemia had a very effective result, and had treatment started early and continued faithfully, the condition could at least have been controlled. In the case of acute lymphatic leukemia with such a rapid course, no known treatment would have been of avail.

715 North Fortieth Street.

REPORT OF A CASE OF COMPLETE HEART BLOCK

WALTER J. WILSON, JR., M.D., DETROIT

The patient, F. B., aged 52, of Polish descent, was first seen Jan. 16, 1914, in consultation with Dr. W. R. Chittick. The day before he had fallen in the automobile factory, where he was employed as a sweeper, fracturing the base of the skull. The doctor who first saw him states that his pulse rate then was 8 per minute. At the time of our first observation the

Fig. 1.—Tracing in case of F. B., Jan. 23, 1914, Series 5-a. Upper line, tracing from apex. Note waves marked *a*, resulting from auricular contraction. Lower line, tracing from right radial artery. Time in 1/5 seconds.

pulse rate was 20 per minute by palpation, which by auscultation was also found to be the rate of ventricular contraction. The patient was transferred from his home to Grace Hospital; on entrance the temperature was 99.4 F, pulse rate 21, respiration 20.

Atropin sulphate 1/60 grain was given hypodermically once daily until February 3. Despite this on the succeeding days following January 16, the highest recorded pulse rate was 26, 23, 28, 28, 36, 29, 30, 29, 30, 26, 28, 28, 32, 30, 28, 30, 32. The Wassermann reaction was negative, and the urinary findings were normal.

Family History.—Both his parents died in Germany and no clear idea of the diseases causing death was obtainable. He has two sisters alive, one 65 years old, the other 55, and both are well. One brother is living and well at 57 years of age. Two sisters died in infancy of unknown causes.

Personal History.—As a child, he had none of the usual sicknesses. When 16 years of age, he had an abscess on the neck, which discharged spontaneously. Since then, he declares he has had no illnesses, but on one occasion, he admitted he had had rheumatism, no doubt the ordinary infectious arthritis, but as he hoped to come under the workingmen's compensation law, he denied this on another occasion. He has been married for twenty-five years, has had six healthy children, and his wife has suffered no miscarriages.

1. Cabot, in Osler: Modern Medicine, 1908, iv, 671, 673.
2. Fussell, Jopson and Taylor: Philadelphia Med. Jour., Jan. 7, 1899.

Physical Examination.—The skin is of good color, the subcutaneous tissues well nourished. There is no cyanosis. The tongue is clear, the mucous membranes of normal color. There is no glandular enlargement, and no edema present. The musculature is well developed. The arteries at the wrist are palpable, but not particularly sclerosed. The blood pressure is systolic 130, diastolic 64. The apex of the heart is located in the fifth space, 11 cm. from the midsternal line, the left border being 13 cm. from the midsternal line, the right border 6 cm. from the midsternal line. The upper border is at the upper border of the third rib. There is a loud blowing systolic murmer, replacing the mitral sound.

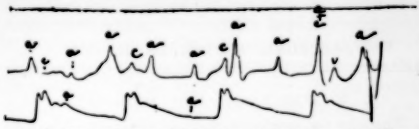


Fig. 2.—Tracing in case of F. B., Jan. 23, 1914, Series 5-c. Upper line, tracing from right jugular vein, *a* representing auricular contraction, *c*, ventricular contraction. Note absence of regular relationship between *a* and *c*, *a* normally appearing 1/5 second before *c* and always followed by *c*. Lower line, tracing from right radial artery, the waves marked *a* due to the influence of auricular contraction. Time in 1/5 seconds.

The other valve sounds are clear but not pronounced. Tracings taken with a Mackenzie polygraph recorded the fact that the auricles were contracting absolutely without relation to the ventricle, at a perfectly independent rate about three times as fast as the ventricle, occasionally contracting at the same time as the ventricle, or just before or just after ventricular contraction.

The cause of his fall was evidently an attack of syncope (he was not near any machinery at the time), to which any one is liable whose pulse rate runs below 30 per minute, especially at the time of change of ventricular rate. The pulse has kept since then nearly at the rate of 30 per minute. At an examination April 13, 1914, the pulse rate was 29 per minute, the systolic pressure 170 mm., the diastolic 130 mm., the systolic murmur persisting as before. On March 2, 1914, the beating of the auricles was audible, being heard in the second right interspace, sounding much like the ticking of a watch.

Feb 10, 1914, the *a* waves were absent in the jugular tracing showing that the auricles had gone into fibrillation. A week later the *a* waves were again present.

June 10, 1915, the patient was seen again and as the tracings clearly show, there is a persistence of the condition, as was to have been expected.

Fig. 3.—Tracing in case of F. B., Feb. 10, 1914, Series 5-f. Upper line, tracing from right jugular vein. Note absence of *a* waves, the auricles evidently having gone into fibrillation. One week later the *a* waves reappeared. Lower line, tracing from right radial artery. Complete dissociation, no irregularity in ventricular contraction.

July 14, 1915, the patient went out of doors to clip some grass about the trees on his front lawn, when he fell to the ground, gasping for breath, and complaining of a pain about his heart. The family physician, Dr. Richard Leiman, was called, who reported to me that the patient's pulse rate was then 19 per minute. He was put to bed and was comfortable, but the same afternoon, as he sat up in bed to vomit, he fell back on the pillow, expiring instantly.

Necropsy was earnestly sought after, but was refused.

David Whitney Building.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

Cable Address . . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

Contributors, subscribers and readers will find important information on the second advertising page following the reading-matter

SATURDAY, SEPTEMBER 11, 1915

MICROBIOLOGY AND MEDICINE

Through the development of microbiology, "the profession of medicine has grown out of its ignorant mysticism into a science; veterinary medicine has found its inspiration, and public health has become a tangible reality."[1] This summary, so well expressed by Marshall in a symposium on the lower organisms in relation to man's welfare, indicates the dominant point of view of the medical profession in contemplating the enormous progress for which modern bacteriology, or more broadly, microbiology, is responsible. One who is engrossed by the manifold relations of this science to the practices of the healing art, and the routine of both personal and public hygiene, is likely to forget that the gifts of microbiology are "broader than any industry, greater than those of any profession, and they can be measured only by the limitations of humanity." It requires an occasional reminder to reawaken our appreciation of the value of the contributions begun by Pasteur and his followers.

Contemplation of the way in which the underlying features of "fermentation" have permeated into everyday life in its manifold aspects is likely not only to create enthusiastic appreciation but also to initiate pertinent suggestions. Each of the great groups of scientific disciplines is liable to forget that microbiology touches our life at almost innumerable points outside of its own sphere. Hence it is well that we look beyond the borders now and then to refresh our memories. In the domain of agriculture, soil microbiology plays an important part. Though it offers helpful analogies to the medical sciences, this is, after all, the least pertinent of the outlying fields. The relations of bacteriology and cognate branches to animal husbandry and food production are always full of suggestion to practical medicine. Dairy products are notably a possible source of contagion; and in many parts of the country the medical profession is entrusted with the drafting of rules which seriously involve the production and distribution of milk. Nothing seems easier to a city practitioner than insistence on a few simple rules of procedure on the dairy farm. The dairy bacteriologist alone seems to realize at present the complexity of the problems presented. Quoting Marshall, as the milk is exposed to the contaminations of the milker, the air, the utensils and the stable, or as it passes through the paths and by-paths of the milking process — the most crucial undertaking, in reality — it becomes more and more laden with dangers. In the eyes of the milk producer, the drawing of milk from the udder and passing it clean to the consumer is fraught at times with insurmountable difficulties. This task is not easy for a trained, intelligent manipulator, so many and diverse are the ways of contamination. Too many who have never drawn a drop of milk from a cow under the practical conditions which surround her find it very simple to lay down regulations. To carry these into effectiveness by force against possible negligence, ignorance, indifference, and even criminal wilfulness, only increases the strength of the barrier which separates the controlling and the controlled elements.

There are still other branches of the food industries in which the physician, posing as an officer of the law, a hygienist or a scientific adviser, should be ready to apply a breadth of vision to his administrative or scientific work. Microbiology enters into the canning, drying, refrigeration, brining and spoiling of food, and into the production of bread, the fermented beverages and other dietary articles. Microbial life often here is the fundamental factor with which inspection or official control is concerned. The appreciation that micro-organisms engender disease paved the way for inspection; but the time has now arrived for the hygienist charged with public functions to have some intelligent appreciation of the economic aspects of microbiology. A rational respect for the exigencies of commerce does not necessarily imply a failure of hygienic duty.

1. Marshall, C. E.: The Technical Application of Micro-Organisms to Agriculture, Science, Aug. 27, 1915, p. 257.

PROLONGED FASTING

Benedict[1] has recently completed studies of a thirty-one day fast at the National Nutritional Laboratory in Boston. The number of accurately controlled experiments eclipses any work on this subject previously attempted, and as a result, many interesting and clinically valuable facts have been corroborated or established.

The subject was hearty in his cooperation, and took only 900 c.c. of distilled water a day by mouth. He lost 13.25 kg., which was 21 per cent. of his normal weight. This is in accord with the results of other fasts. Succi lost 25.6 per cent. of his body weight in a forty-day fast. A dog fasting 117 days lost 62.9 per cent. of the initial weight. He was fed, regained his original weight, starved 111 days, and lost 53 per cent.

1. Benedict: A Study of Prolonged Fasting (monograph), 1915.

of his weight. Luciani, who controlled the forty-day fast of Succi in Florence, has assumed that there is a mathematical relationship between the loss per day and the length of the fast. Benedict, however, has shown that this does not hold for human beings. He regards the weight loss as due to two factors: First, tissue is oxidized to supply material for a maintenance of body activities. Second, there is a loss of preformed water, that is, the water in the oxidized tissues. This water is lost more rapidly during the first days of a fast because there is greater tissue disintegration. This metabolic activity decreases for the reason that the subject becomes less inclined to do muscular work; he conserves his energy. He even clothes himself more heavily in order to preserve the body heat. Weight loss during a fast is decreased by the drinking of large amounts of water. It has been assumed that this water acts as a nutrient and spares the tissues. It is surprising to note that the loss of water as insensible perspiration, in Benedict's subject, varied between 371 and 691 gm. per twenty-four hours. In an individual on a full diet, this amount is much higher.

The Berlin investigations on Cetti, a professional faster, describe the "irritable heart of fasting." The pulse rate is supposedly much increased on even slight exertion. Benedict's work does not confirm this. On the contrary, the amplitude of the pulse rate, that is, the difference between the pulse rate at first as compared with the rate when active, became less and less as the fast progressed. Accompanying this was a progressive decrease in the blood pressure, a maximum fall of 30 mm. of mercury resulting. There was also an actual decrease of 3 cm. in the width of the heart. These findings have been reported in other investigations, and are probably due to a decreased peripheral resistance. When, at the conclusion of the fast, food is again taken, the usual pulse amplitude returns and the blood pressure soon rises to normal. From this work it is claimed that the pulse rate may be used as a legitimate index to metabolism.

Numerous changes have been reported as occurring in the blood of fasting subjects, among these a marked increase in the number of red cells. Benedict found chiefly an early rise of polynuclear leukocytes, and an increase in the blood acidity. The leukocytosis is apparently of little importance, since the leukocytes are the most sensitive of the blood cells, and respond to such stimuli as a meal or a cold bath. Their number fell to normal after the first few days of the fast. The blood acidity, from a study of the alveolar air, was found to increase markedly on the second and again on the fourteenth day of the fast, and remained at this high level throughout. When the fast was broken, it fell to normal. The hemoglobin and the total quantity of blood remained constant.

During the first days of the fast, more heat came from the glycogen that was burned than from the protein so used. Since glycogen burns most easily, it was rapidly drawn on and the available supply quickly depleted. From the first to the third day, from 10 to 16 per cent. of the heat was derived from glycogen. From the third to the thirteenth day, from 1 to 3 per cent. was so obtained. The combustion of glycogen ceased after this time. As one would expect, fat eventually becomes the chief source of heat. In normal catabolism, fat is burned completely, the end-products being carbon dioxid and water; but in some pathologic conditions and in inanition, fat combustion is defective, and certain partially oxidized substances known as acetone bodies are produced and excreted chiefly in the urine. The clinical significance of this phenomenon is well known. These acetone bodies were present in the urine throughout the latter part of the experiment. The concentration of alkali necessary for their combustion greatly exceeds that which can be tolerated by the body.

Indicative of the so-called acidosis that occurs during starvation, besides the acetone bodies, the urine contains a large number of organic and inorganic acid radicals. Thus chlorin, phosphorus pentoxid, sulphur trioxid, and oxybutyric and other fatty acids are found. An albuminuria with hyaline and a few granular casts may also occur, but clears up after the fast is broken.

From a study of the oxygen consumption, the carbon dioxid excretion, the pulse rate and the temperature, one may conclude that there is a parallelism between these activities and the metabolism, and that the body acts as a unit irrespective of its state of nutrition.

THE SWEET POTATO AND ITS SUGARS

It often happens that the things with which we are most familiar are those about which least is known. Thus, we venture to surmise, few remember much of the history of that lucious vegetable, the sweet potato; and few stop to consider what makes it sweet.

Humboldt says that sweet potatoes were among the trophies which Columbus brought back from the New World to lay at the feet of Isabella of Castile. It is regarded as certain that their introduction into Europe antedated that of Irish potatoes. Indeed, historically, the yellow or sweet potato (*Convolvulus batatas* or *Batatas edulis*), instead of the "common," white or Irish potato (*Solanum tuberosum*), is the rightful claimant to the unmodified title of potato. Such was the meaning of the word down to the middle of the seventeenth century. Thus, when Falstaff, in "The Merry Wives of Windsor," exclaims, "Let the sky rain potatoes . . . hail kissing comfits and snow eringoes," it is to sweet potatoes that he refers. ("Eringoes," by the way, were the roots of *Eryngium maritimum*, formerly esteemed as delicacies when-candied.) It will be observed that the fat knight classes

potatoes with sweetmeats. Shakespeare probably knew these roots as luxuries brought from Spain or Portugal, for sweet potatoes were largely imported from those countries during the reign of Queen Elizabeth.

As indicated by the botanic names, the sweet potato belongs to a different family (the *Convolvulaceae*, or morning glory family) from that of the Irish potato (the *Solanaceae*, or nightshade family). Its general chemical and nutritive properties are similar to those of its namesake, though the percentage of starch and sugar is higher in the tuberous roots of *Convolvulus batatas* than in the tubers of *Solanum tuberosum*. The sweet potato owes its distinctive yellowish tint to xanthophyll, which is distributed throughout its substance. Its characteristic sweet taste is due to various sugars. Sugars are present in the Irish potato also, but in much smaller proportions.

Stone,[1] twenty-five years ago, demonstrated the presence in sweet potatoes of sucrose or cane sugar. This is one of the more complex sugars in which the molecules are so bound that they do not reduce Fehling's solution. Later observers have found reducing sugars present also.

It has been known for some time that in the tuberous roots of the sweet potato, as in the resting storage organs of other plants of temperate regions, starch is transformed into sugar. In most plants the transformation of starch into sugar ceases at a few degrees above the freezing point. The sweet potato is exceptional in that, soon after it has been gathered, transformation of starch into sugar takes place at much higher temperatures — as high as 30 C. (86 F.). A higher proportion of sugar is formed in cold than in warm storage, however.

Hasselbring and Hawkins[2] mention another interesting peculiarity of the sweet potato. Except in soft-wooded trees, reducing sugars have been observed as the usual and most abundant products of starch transformation in resting storage organs. In the sweet potato, on the contrary, little reducing sugar results from this transformation; the principal product is sucrose. Hasselbring and Hawkins found that, while the cane sugar content of sweet potatoes rose as high as 8.74 per cent. in cold storage, the proportion in all cases remained approximately 4 or 5 parts of sucrose to 1 of reducing sugar.

A further contribution to the study of the carbohydrates of the sweet potato has recently been made by Professor Miyake of the Tokoku Imperial University, Sapporo, Japan. Miyake finds that, in addition to fructose (levulose), which had previously been recognized, the reducing sugars of this root include glucose (*d*-glucose, grape sugar, dextrose). Since the sucrose molcule is made up of a glucose and a levulose molecule, it might be regarded as a possibility that these reducing sugars are the result of a splitting of the sucrose. This, however, is not discussed by Miyake.

It would be pleasant to believe that all these researches might have a practical — a gastronomic — outcome. At its best and rightly cooked (baked "in its jacket," so that the rich, black, syrupy juice is incrusted wherever the cook's fork has pricked it), this vegetable is a unique delicacy. As it reaches our Northern markets, or, at any rate, our Northern tables, however, it is too often dry and insipid. Would that science could procure and insure for us the sweet potato as the South knows it at its delectable prime!

1. Stone, W. E.: Ber. d. deutsch. chem. Gesellsch., 1890, xxiii (1), 1496.
2. Hasselbring, H., and Hawkins, L. A.: Physiological Changes in Sweet Potatoes during Storage, Jour. Agric. Research, January, 1915, p. 331. Ripening and Storage of Certain Foods, editorial, THE JOURNAL A. M. A., April 3, 1915, p. 1165.

THE NORMAL BLOOD-SUGAR CONTENT

Whenever a new diagnostic test or procedure is introduced into medicine, the limits of normal reaction or response must usually be settled. What are the "normal" blood pressure, the "normal" output of uric acid, the "normal" acidity of gastric contents, the "normal" number of erythrocytes or leukocytes in a unit volume of blood? These are questions which we must repeatedly ask ourselves. As knowledge has increased, statistical data have accumulated in greater and greater numbers, and each individual method has been subjected to more critical examination. The usual outcome has ultimately been to show that, instead of insisting on a "normal" as something fixed and invariable, we must usually regard it as a changing record of some function which varies within reasonable ranges, depending on physiologic circumstances. Exercise, food, temperature and diurnal rhythms in the mode of life are all factors which introduce a play of new variables on the performances of the bodily mechanism.

The estimation of the sugar content of the blood is experiencing a similar history. The diagnostic importance of determining this "constant" when its diagnostic usefulness is indicated has now become firmly established in the routine of the clinic. First, the methods of analysis were subjected to criticism and improvement, and now the question is asked, What is the "normal" sugar content of human blood?

The statistics of ten or twelve investigators have placed the answer at figures showing variations as wide as from 0.05 to 0.12 per cent. In such a range, little consideration has been given to differences occasioned by meals in contrast with the fasting condition, or by other influences that might affect "sugar mobilization." The newest attempt to obtain a clearer understanding of the actual meaning of the word "normal" as applied to blood sugar is that made by Strouse[1] and his collaborators at the Michael Reese

1. Strouse: S.: The Accurate Clinical Study of Blood Sugar, Bull. Johns Hopkins Hosp., 1915, xxvi, 211.

Hospital, Chicago. Their experiments on healthy young men and women were planned to determine the normal variations throughout the day's routine. It was found that a very definite curve could be plotted for every individual and that, although the exact height of the figures varied slightly under similar living conditions, the curves of all normal persons followed similar lines. It became evident, in harmony with the observations of other investigators, that the carbohydrate in the diet is the most important factor influencing the daily changes in blood sugar. The lowest normals are usually obtained in the early morning; after breakfast there is a rise, followed by a fall, and a second rise after dinner. In persons who partake of no carbohydrate, a practically constant figure is obtained all day.

In the experience of these investigators, the normal blood sugar, studied with relation to the diet, varies from 0.04 to 0.12 per cent., with an average of 0.084 per cent. in the ordinary day of a normal person. Hirsch[2] has likewise found, in his studies on patients in the Städtisches Krankenhaus in Wiesbaden, that the blood sugar content of the healthy, fasting individual does not exceed a value of 0.12 per cent. In the course of the day the figures obtained by Hirsch for this index of the blood showed pronounced variations dependent on the character of the diet. The highest values, amounting to 0.18 per cent., were obtained at from 2½ to 4 hours after the noon meal. From this it will be seen that there are no fixed normal values. As Strouse has expressed it, the only difference in blood sugar between the normal and the diabetic organism is one of degree. The diabetic diurnal curve is identical in form with the normal curve, but the low figures are not obtained and the variations are wider. In mild diabetes, the blood sugar on a fasting stomach may be within normal limits. Therefore, comparisons of single blood sugar determinations on individuals, from the standpoint either of diagnosis or of treatment, may be of little value. A postprandial hyperglycemia may be decidedly significant. It follows that blood sugar determinations, to serve their greatest usefulness, should be performed both before and after an ordinary meal containing carbohydrate.

Now that the existence of quite decided normal diurnal variations in the sugar content of the blood have been conclusively demonstrated and an explanation has been secured, the debated question of the influence of drugs, particularly the anesthetics and narcotics, deserves a reconsideration from a new standpoint. This has been attempted by Hirsch.[2] In twenty-four cases after uniform chloroform or ether narcosis or mixed anesthesia with simultaneous administration of oxygen, a rise in the blood sugar values not attributable to dietary factors was uniformly observed. The upper limits reached approached 0.18-0.19 per cent., never exceeding 0.21 per cent. No attendant glycosuria was discovered in any of these instances. Evidently the kidneys are not permeable to sugar at such levels of the blood content except under special circumstances.

2. Hirsch, E.: Ueber physiologische Tagesschwankungen im Blutzuckergehalt des Menschen unter Beeinflussung desselben durch Aether- und Chloroformnarkose, Ztschr. f. physiol. Chem., 1915, xciii, 355.

THE REGULATION OF THE CIRCULATION

Recent experiments on man at rest and at work by Boothby,[1] in the surgical clinic of the Peter Bent Brigham Hospital at Boston, indicate that the circulation rate increases progressively with the oxygen consumption, in a manner corresponding to the increase in the total ventilation. This seemingly close interrelationship between the respiratory functions of the lungs and the circulation of the blood has suggested that there is some underlying biologic or physiologic factor which controls both of these processes. Indeed, in its broadest sense, respiration consists of something more than the physical and mechanical changes which have their seat in the lungs. It is not uncommon to speak of cell respiration or tissue respiration as an aspect of the metabolic functions on which life depends. Between the gases of the atmosphere and the body cells, the devices for the diffusion and transport of oxygen are interposed.

The control of breathing is effected with such a degree of nicety as to afford one of the most striking examples of a delicate physiologic regulation in the organism. It aims to maintain in each individual a practically constant partial pressure of carbon dioxid in the alveolar air. The latter reflects the conditions obtaining from moment to moment in the blood. A rise in the pressure of carbon dioxid promptly increases the breathing. It is now generally agreed that the action of the blood on the respiratory center is due to its "total acidity," not to the carbon dioxid alone. The effect on the regulatory mechanism is determined essentially according to the concentration of the hydrogen ions in the arterial blood that reaches it.

Boothby[1] finds it difficult to believe that one part of this respiratory mechanism—the ventilation of the lungs—is carefully and delicately regulated to the needs of the body without the other mechanism—the circulation of the blood—being likewise as carefully and delicately regulated. He ventures the assumption that the factor which regulates and controls respiration governs both these mechanical processes—the ventilation of the lungs and the circulation of the blood—and not merely one of them, as heretofore believed.

The conception that the acidity factor of the arterial blood controls with equal delicacy the ventilation

1. Boothby, W. M.: A Determination of the Circulation Rate in Man at Rest and at Work, Am. Jour. Physiol., 1915, xxxvii, 383.

of the lungs and the rapidity of the blood flow is strengthened, according to Boothby, by the evidence that after forced breathing — which produces a reduction in the arterial carbon dioxid tension with a parallel decrease in the hydrogen ion concentration — the circulation rate is slowed.[2]

From the standpoint of this hypothesis, we may postulate a respiratory center in a newer sense — a combination of a subordinate circulatory center and ventilation center. In addition to the chemical regulation of the circulation, Boothby points out, it is evident that the blood movements can be influenced by factors of nervous or psychic origin in the same manner as in the pulmonary ventilation. Such influences, however, are only temporary, he adds, and designed to meet sudden emergencies which require immediately in the muscles a greatly increased oxygen supply, before a sufficient time could elapse for the chemical stimulus to be produced and to take effect.

Current Comment

THE HYPOTHESIS OF PROTECTIVE ENZYMES

Recently Taylor and Hulton[3] of the University of Pennsylvania pointed out that the hypothesis of Abderhalden, which forms the basis of certain current serum tests, has suffered from dogmatic generalization. The theory of the formation of protective enzymes by the organism has become the foundation for the specific diagnosis of pregnancy and malignant neoplasms, and it predicates in a general way the formation of fairly specific proteolytic enzymes in response to the parenteral introduction of foreign proteins. The latter have been taken to include a protein not ordinarily found in the body, for example, one derived from another species, as well as a protein "displaced in the body," as in the case of placental tissue products distributed through the circulation. In order to test the hypothesis in its generalized form, Taylor and Hulton have employed a rather unique protein, the protamin of a salmon, in order to develop the alleged protective device. Normally the blood serum digests this protamin in very slight degree at best. The blood of "immunized" animals likewise gave negative results. From this the Philadelphia investigators feel constrained to remark that the dogmatic statement that the body responds with protective ferments to the injection of foreign proteins as a class reaction cannot be maintained. They properly warn us, however, that negative results should not be abused as the original hypothesis has been, for that result does not prove that in response to placental protein no protective enzyme is formed. Generalizations, when made too hastily, may be detrimental.

2. Boothby, W. M.: Absence of Apnoea After Forced Breathing, Jour. Physiol., 1912, xlv, 328.
3. Taylor, A. E., and Hulton, F.: On the Formation of Specific Proteolytic Ferments in Response to the Parenteral Introduction of Foreign Protein, Jour. Biol. Chem., 1915, xxii, 59.

LIGHT, NOT LAWS

The tendency to load the American Medical Association with responsibilities that should be borne by other organizations has long been deprecated by THE JOURNAL. Hardly a day passes that a letter is not received at THE JOURNAL office suggesting that the American Medical Association should prosecute this, that or the other fraud, or should use its influence to have a special law passed to put some particular swindle out of business. The reply to such suggestions is, obviously, that it is not the province of the American Medical Association either to prosecute frauds or father laws. As a matter of fact there are already in existence not only laws enough and to spare for attacking most of the frauds in medicine, but also the legal machinery to enforce such laws. This machinery will continue to move slowly, spasmodically and inefficiently, until public opinion has been aroused to the way in which people are duped and swindled by frauds of a medical and quasi-medical type; and public opinion can be aroused only by education. THE JOURNAL'S propaganda against fraud in medicine is wholly educational in character — not punitive.

"DID THEY GET ANY OF YOUR MONEY?"

It is a matter of satisfaction to the medical profession when it finds its self-imposed burden of attempting to protect the public from schemes that are questionable or worse, being shared by other organizations of a public or semi-public character. This thought is inspired by a sixteen-page pamphlet that has just come to THE JOURNAL office. It is entitled "Did They Get Any of Your Money?" and is issued by the Cleveland Chamber of Commerce and deals with an institution styled the "Children's National Tuberculosis Society." Some details of this "society" appear in the Propaganda department of the current issue. The Cleveland Chamber of Commerce maintains a "Bureau of Soliciting Schemes" which, it is estimated, saves the people of Cleveland $90,000 a year "by suppressing ill-advised or fraudulent soliciting for alleged charitable purposes." The Cleveland public has learned the value of this bureau of their Chamber of Commerce and has cooperated heartily with it by reporting new soliciting schemes, as they are started, and requesting advice regarding such schemes. The "Children's National Tuberculosis Society" while not fraudulent, seems to be one of those quasi-philanthropic organizations which, with a minimum of practical work, deflects the greater bulk of the subscriptions collected into the pockets of the promoters or their agents. In the five months the "Children's National Tuberculosis Society" operated in Cleveland, it is estimated that the local agency collected $2,500 from the people of that city. As this amount would have steadily increased had the "society" been permitted to continue its operations, the financial value alone of the service given by the Chamber of Commerce can be readily appreciated. Such activities as those exhibited by the business men of Cleveland, through their own organization, are highly encouraging and make for optimism.

THE OLDER MEDICINE IN THE LIGHT OF MODERN SCIENCE

It is an interesting fact that many customs and practices, which were popular long before the advent of modern knowledge, are finding a justification in the discoveries of the science of today. In an address before the Mellon Institute of the University of Pittsburgh, Abel,[1] of Johns Hopkins, has pointed out another instance, like bloodletting, of the everyday observation of mankind justified by science. Various races have long made use of the skin of the toad for medicinal purposes. The Chinese still use as a cure for dropsy a preparation called senso, derived from toad skin. We are told that among western nations it has always been a folk remedy; and Abel states that almost up to the time of the introduction of digitalis as a medical agent, in 1775, the best medical authorities used toad skins in dropsy. A toad ointment including a concentrated decoction of the animal, fresh butter and tincture of arnica was in use among our early New England colonists for the treatment of sprains and rheumatism. A rationale for this procedure has been found in the fact that the skin of certain species of toads is now known to yield powerful poisons.[2] The familiar epinephrin has been isolated from the skin secretion of a tropical species. A quite different principle, a crystalline compound of the formula $C_{18}H_{24}O_4$, named bufagin, has been determined by Abel to be responsible for the curative power which the toad skin has for dropsy. That powdered toad skin should cure dropsy, he reminds us, has been ridiculed by the learned for a century; but now we possess in bufagin and in the slightly different bufotalin, which has only recently been obtained in crystalline form from the skin of the common European toad, the actual proof of the correctness of the old belief.

1. Abel, J. J.: Experimental and Chemical Studies of the Blood, with an Appeal for More Extended Chemical Training for the Biological and Medical Investigator, Science, Aug. 6, 1915, p. 165.
2. Abel, J. J., and Macht, D. I.: The Poisons of the Tropical Toad, Bufo Agua, THE JOURNAL A. M. A., May 27, 1911, p. 1531; Two Crystalline Pharmacological Agents Obtained from the Tropical Toad, Bufo Agua, Jour. Pharmacol. and Exper. Therap., 1912, iii, 319.

LOCAL INDUSTRIES AND THE SOFT PEDAL

The American Public Health Association has just held its convention in Rochester, N. Y. Rochester has been the home of many medical frauds, of which Duffy's Malt Whiskey, if not the greatest, is probably the best known. When the program of the association was being made up, a physician connected with the Department of Health of New York City was invited to give an address on "The Patent Medicine Fraud." The invitation was accepted. Later a Rochester physician—who was not on the program committee—wrote to another official in the New York Health Department intimating that any discussion of local "patent medicine" frauds would not be desirable and expressing the opinion that "to bring battle into the enemy's own country would be rubbing it in, no matter how well-merited the censure might be!" These facts in greater detail are brought out in the *Weekly Bulletin* of the Department of Health, City of New York, for August 28. It is the old story: Don't hurt local industries. No matter how fraudulent, how subversive of the public good, how dangerous to the public health, the industry brings money to the town; that is enough — speak softly! Doubtless it was this spirit that a few years ago inspired the secretary of the Chamber of Commerce of Rochester, the postmaster of Rochester, the cashier of one of Rochester's national banks and the president of the Rochester *Herald* Company each to write a testimonial letter relative to the "business integrity" of the "New York Institute of Science" — as bald a swindle as ever drew a fraud order from the federal government. Probably the same spirit induced the late Congressman Perkins of Rochester to come to the defense of Duffy's Malt Whiskey when the federal officials seized a large consignment of this fraudulent nostrum under the powers granted them by the Food and Drugs Act. If the "patent medicine" interests of Rochester are doing a legitimate and honest business they had nothing to fear from an address on "Patent Medicine Frauds." If, on the other hand, they are defrauding and swindling the sick, then the public-spirited citizens of Rochester should be the first to denounce the evil within their gates.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ILLINOIS

Typhoid Fever.—Dr. C. St. Clair Drake, secretary of the State Board of Health, in his latest bulletin notes that there are approximately 1,200 cases of typhoid fever in the state and this under ordinary conditions means that the number will be trebled before the end of September.

Typhoid Vaccination for Railway Employees.—Dr. Guy G. Dowdall, chief surgeon of the Illinois Central Railroad has asked the State Board of Health to send him 500 packages of antityphoid serum for the inoculation of employees of the system.——Moline physicians have sent a request to the state board for sufficient antityphoid serum to vaccinate 400 persons.

Personal.—Dr. George W. Brock has resigned as physician to the State Penitentiary, Joliet.——Dr. D. C. Richards, Bloomington, is reported to be critically ill.——Drs. F. W. Broderick and R. Leslie Hopkins, Sterling, were seriously injured in a collision between their automobile and an interurban car, August 22.——Dr. Ed M. Irwin, Belleville, has been appointed local surgeon for the Southern Railway.

Foot and Mouth Disease.—Foot and mouth disease has affected the prize herd of cattle of Mr. Samuel Insull at Libertyville, and ninety head of stock were killed.——An infected herd has been discovered on the lines between Lee and Bureau counties and the territory closed on account of this outbreak includes the townships of Ohio, Lamoille and Clarion in Bureau County, and the townships of East Grove, May and Sublette, in Lee County.

Examination for State Epidemiologist.—An examination is announced to fill the position of epidemiologist for the Illinois State Board of Health, a position created by the last legislature and carrying a salary of $2,400 per annum. This examination has been thrown open by the state civil service commission, Springfield, to male residents of the United States, over 25 years of age. Questions will be sent out to all applicants at a given time, touching on their education, professional experience and other training and from the answers, a selection will be made of those who appear to have the necessary qualifications and these will be asked to

torium Company as the result of a controversy derived from the annulment of the sanatorium company's charter in South Dakota.

Personal.—Dr. Charles Flett, Milbank, has been appointed county superintendent of health for Grant County.——Dr. Hampton R. Kenaston, Bonesteel, has been elected president of the South Dakota State Board of Health and Medical Examination.——Dr. Gustave A. Landmann, Scotland, has been appointed coroner of Scotland County, vice Dr. Black, resigned.——Dr. and Mrs. Thomas T. Church, Scotland, started on a trip to the Pacific Coast, August 3.

WISCONSIN

Barber Examining Board.—The State Board of Health, in accordance with an amended law of the last legislature, has appointed the members of the new State Board of Examination for Barbers.

Dispensary Enlarged.—The Milwaukee Society for the Care of the Sick is about to enlarge its southside free dispensary by the addition of three more rooms to its quarters in the Juneau Building.

State Medical Board Appointments.—Dr. Royal C. Rodecker, Holcombe, was appointed to succeed Dr. Abner B. Bailey, Fennimore. Additional appointments were as follows: Dr. John M. Dodd, Ashland; Dr. Henry W. K. Abraham, Appleton, and Dr. George H. Ripley, Kenosha.

Boats as Tuberculosis Hospitals.—Paul L. Benjamin, secretary of the Antituberculosis Society of the Milwaukee Associated Charities, has suggested the use of old river boats for floating hospitals for tuberculosis patients. This plan has been adopted with success in New York City where ferry-boats are used for this purpose.

Whooping-Cough.—September 1 it was reported that there had been 700 cases of whooping-cough reported to the health office in Milwaukee. Several deaths from the disease are said to have occurred. The superintendent of the schools has been notified that children who cough or show evidences of the disease must be sent home for a period of two weeks.

Branch Laboratory for Ashland.—Dr. John M. Dodd, Ashland, is making an effort to have the branch of the state hygienic laboratory established in Ashland, and has offered for this purpose, his private laboratory and office building. The act requires the city in which the laboratory is to be located to contribute $2,500 toward the erection of the laboratory.

Central Bureau for Tuberculosis Administration.—The State Antituberculosis Association is planning to establish a central bureau at some point at which physicians may ascertain in what institutions, outside of the counties in which they practice, vacancies exist. This information to be used in the event of the institution in the physician's own county being overcrowded.

Personal.—Dr. A. Melbourne Foster, Racine, who was injured in an automobile accident, August 16, is still at St. Mary's Hospital, Racine, and not yet out of danger, although he is reported to be improving.——Dr. James R. Kingsley, Sheboygan, was the guest of honor at a banquet given by the Sheboygan Medical Association, August 19. Dr. Kingsley is about to leave Sheboygan to establish a sanatorium in Three Rivers, Mich.——Dr. Fred L. McDaniel has been transferred from the Hayward Indian School to the Pueblo Bonito Indian School, Crown Point, N. M.

CANADA

Lepers in Canada.—In the leper lazaretto at Tracadie, N. B., there are sixteen patients—seven males and nine females. This is the smallest number in years. This is claimed to be the result of the system of treatment now being carried out in that institution. Two former inmates discharged in 1912 remain cured.

Saskatchewan Hospital Unit.—Good progress has been made in the organization of the Saskatchewan Hospital Unit. The medical men of the province, through the medical council, have contributed $10,000, the provincial government has given an equal amount, and the city of Swift Current has offered to furnish the operating room at a cost of more than $3,000. The unit consists of 200 beds with a complete nursing and orderly staff and has been offered to the Imperial government and accepted by it.

Disease After War.—The danger of disease after war is over is commencing to engage the attention of the Dominion of Canada quarantine authorities. When wounded soldiers are being brought back, the utmost vigilance will be exercised by those authorities. During the past year Canada was saved by watchfulness at the ports of entry from the inroads of any epidemic diseases from abroad. At the various quarantine stations 253,608 persons were inspected and a total of 543 persons were quarantined.

Personals.—Dr. Walter W. Wright, Toronto, has returned from graduate work in London, England.——Dr. S. Alexander, Elmira, Ont., has arrived safely in England, where he has been appointed senior medical officer to a British regiment.——Dr. Jack Maynard, Stratford, Ont., has gone to Camp Niagara where he will be medical officer with the ninety-second battalion. He is the third Stratford physician to be given a responsible military post, Dr. Oscar Cannon being at the Dardanelles with the A. M. C., and Dr. David Smith with the thirty-fourth battalion at London, England.

The Disablement Fund.—The Disablement Fund being started in Canada under the auspices of the Military Hospital Commission has started off with a good subscription. Mr. James Caruthers, Montreal, has donated $100,000. Among those who have offered their residences for convalescent homes for returned wounded is Mrs. Ross, widow of the late Dr. James F. W. Ross, Toronto. The commission is equipping part of the new Immigration Building, Quebec, for a distribution hospital. The men on arrival will be examined at this institution and allotted to convalescent homes accordingly.

Base Hospital Personnel.—There is said to be no truth in the rumor in Toronto that the University of Toronto Base Hospital in England has been broken up. It has been separated for a time but will be recalled into a unit when necessary. Dr. Andrew R. Gordon is at home ill. Drs. Royce and Stanley Ryerson went to the Horse Guards; Dr. Graham Chambers was given work in London hospitals attending wounded officers; Drs. Gaillie, Pearse, Armour, Gaby, Imrie, and Fletcher went to the London hospitals; Brodie, Mackenzie, and Caulfeild are doing special work in pathology in London; Drs. Malloch, Wilson and McPhedran went to Aldershot; Drs. King Smith, Hewitt and Sharpe went to Woolwich; Dr. McVicar to Taplow; Dr. Graham to France, and Drs. Primrose, McKeown, Parsons, Hendry, Watson, and Boyer are doing "board work" at Moore Barracks.

Public Health President Advocates Universal Military Training.—As a means of physical development and promoter of public health, Dr. Maurice M. Seymour, Commissioner of Public Health in Saskatchewan and president of the Canadian Public Health Association, strongly advocated universal military training for all young Canadians at the annual meeting of the association in Toronto, September 3 and 4. Dr. Seymour also spoke of the necessity of caring for prospective mothers. He outlined the new law in Saskatchewan which gives every mother $25 and pays a doctor a fee of $15 for medical attention. Various aspects of the problem of the feeble-minded in Canada were discussed. Dr. J. D. Page, quarantine officer for the Canadian government in Quebec City, attributed the excessive growth of the number of feeble-minded in Canada to the lax methods of enforcing the immigration law in regard to the inspection of immigrants. He declared the men employed for this work were in the main inefficient and got their positions through political pull. Dr. J. W. S. McCullough, chief medical officer of health for Ontario, addressed the congress on Modern Military Sanitation, and from his experience at Camp Niagara the past summer, considered that tent life was far superior to life in barracks, providing there was protection from inclement weather.

Hospital News.—Hon. W. J. Hanna, provincial secretary for Ontario, announces that since war was declared the Guelph Central Prison has been busy on making hospital beds. The Ontario government received a request for 1,500 beds, 1,500 mattresses and 3,000 blankets for use in Canadian hospitals in England. They turn out fifty enameled beds per day and will fill the entire order by November 1.——On his return, the premier of Canada, Sir Robert Borden, has announced that the Dominion government has decided to provide a hospital near Paris for wounded French soldiers. The government has decided to equip the hospital with French-Canadians. Canada has contributed nobly for alleviating the suffering of the wounded in France, the gifts having included $100,000 towards a French hospital at Dinant. The hospital staff is already in England under command of Col. A. Mig-

nault of Montreal, with a staff of French-Canadian medical men and nurses, and was in charge of a tent hospital capable of caring for 500 hundred wounded on the south coast of England. This hospital will leave for France in the near future.——The Ontario government announces that there is no truth in the rumor that a certain Toronto doctor has been appointed chief surgeon of the Ontario hospital being established in England. Appointments to the staff of that hospital have not yet been considered by the government.——Fifty men have already been accepted for No. 6 Laval Hospital for overseas service and the applications of fifty nurses are being considered. A knowledge of the two languages is preferred for recruits for this hospital.

GENERAL

Southern Physicians to Meet.—The annual meeting of the Southern Medical Association will be held in Dallas, Texas, November 8 to 10.

Guard Ports Against Cholera.—Surgeon General Rupert Blue and the United States Public Health Service are using the most stringent methods to prevent the admission of possible cholera patients through United States ports. Cholera is reported in twenty-three localities in Germany and it is now rumored that the cholera infection in the Balkan territory has been carried into Italy.

Membership of the National Tuberculosis Association.—On July 1 there were 2,357 members in the National Association for the Study and Prevention of Tuberculosis. Of these, one half are physicians and one half laymen. Of the fifty-eight directors, thirty-six are physicians and twenty-two laymen. The far Western states show the largest percentage of medical membership. This is probably explained by the fact that most of the climatic resorts of the country are located in the West. In the Eastern states the laymen predominate. The eastern states also have the largest proportion with 3.8 members for each 100,000 population. The central states have 1.3 members and the Western states 2.5 members per 100,000.

Bequests and Donations.—The following bequests and donations have recently been announced:

Jewish Consumptives Relief Society and Associated Jewish Charities, Chicago, each $10,000, by the will of Bernard Baumgarden, Chicago.

To build a hospital in Darlington, S. C., for negroes, the estate of Edmund H. Dease, valued at from $25,000 to $30,000, on the death of his widow.

Rockefeller Institute for Medical Research, New York City, $200,000, by the will of Henry Rutherford.

Lima (Ohio) Hospital, improved real estate in Lima, contingent on the death of his sons, childless.

Ladies Aid Society of the Presbyterian Hospital, Philadelphia, nine shares of stock in Mine Hill and Schuylkill Railroad, by the will of Mary Sutherland.

To introduce a hospital for the cure of inebriates in Wilkes-Barre, Pa., the estate of Mrs. Rose Payson, Wilkes-Barre, subject to her husband's life interest in the estate.

Work of the Special Relief Society.—The Special Relief Society, through its executive committee, is endeavoring to arouse the women of America to a full realization of the importance of immediate preparedness. The work which the women can do consists in the offering of summer homes for emergency hospitals in the event of war, the preparation of kits for the regular and volunteer army, the making of garments needed in the field, the making of an auxiliary kit, convalescent kit, hospital kit, the provision of extra camp comforts for the soldiers, the organization of sewing clubs, contribution of materials and funds, the preparation of a list of volunteer nurses. The membership of the society consists of the following classes: sustaining members, annual members, contributing members and life members.

Race Betterment.—The second international conference on race betterment was held at San Francisco, August 4 to 8, and discussed race decadence, the possibilities of race improvements, and the agencies of race betterment. Among the important papers presented was that of Luther Burbank on, "Evolution and Variation with the Fundamental Significance to Sex," in which he claimed that only through constant selection of the best can any race be improved. Paul B. Popone, in discussing "The Natural Selection of Man," declared that there were only two ways to improve the general character of the race: one, by killing off the weakling, and the other by eugenics. Dr. John H. Kellogg of Battle Creek proposed that the conference institute a eugenics register which would take note of two classes: first, those who are found to measure up to eugenic standards; second, children born of patients who conform to the required standard.

First Aid Conference.—On August 23 and 24 a first aid conference was held in Washington, D. C. In this conference both surgeons of the Army and Navy and Public Health Service, railway surgeons and civil surgeons, participated. The plans of the conference as summarized in the prospectus were: to take active measures to capitalize for Army purposes the best medical talent in the United States; to awaken the profession to a realization that emergency surgery and surgery of infected wounds is being neglected; to standardize first aid appliances and incidentally surgical appliances so that not only uniformity may be secured, but the prices of all appliances may be reduced; to provide for active cooperation between military and civil surgeons, so that the Army may secure the best men and the colleges may secure the services of Army men as instructors; to standardize the service supply tables, cutting out useless drugs, etc. Backed by the approval of the U. S. Medical Association, this standard would have great weight; to provide for a permanent board selected from Civil and Service surgeons to pass on these and other subjects—their decisions to be ratified by the American Medical Association, etc. Permanent organization was effected under the name of the First Aid and Accident Surgery Society. Major General William C. Gorgas, surgeon general, U. S. Army, was elected president; Dr. Joseph C. Bloodgood, Baltimore, secretary, and the following were appointed members of the executive committee: Col. W. S. Battle, general claim agent of the Norfolk and Western Railroad; Dr. A. S. LeConte, Philadelphia; Dr. Eve of North Carolina; Dr. Jonathan N. Wainwright, Scranton, Pa., and Surg. Gen. Rupert Blue, U. S. P. H. S.

FOREIGN

Award for Mothers with Four Children.—The sum of $25,000 has recently been presented to the province of Düsseldorf the income of which is to be distributed among mothers who have four well-kept children under 14.

Deaths in the Profession Abroad.—J. U. T. Quensel, professor of pathologic anatomy and hygiene at the University of Upsala, aged 75.——G. Cattaneo, for half a century professor of surgery at the University of Pavia, aged 83. He bequeathed most of his property to found an institution there for treatment of the maimed and crippled. He was also one of the first to organize a dispensary for tuberculous children, and he served the community in various local political offices.

Personal.—The Moxon gold medal of the Royal College of Physicians has been awarded to Prof. J. J. Déjerine, and the Baly gold medal to Dr. F. Gowland Hopkins.——Dr. H. P. Römer, director of the Institute of Hygiene, Greifswald, Germany, has succeeded Professor Fränken, at the University of Halle, Germany.——Dr. Seishu Kenoshita, professor of gynecology and obstetrics in the Imperial University, Tokyo, Japan, has been designated by the government to make an extensive tour and study of American hospitals. A dinner of farewell was arranged by Dr. R. B. Teusler, director of St. Luke's Hospital, Tokyo, who spoke eulogistically of Professor Kenoshita. Dr. Ichiki also spoke of the value of the work being done by Dr. Teusler and his associates.

Drug Supply in the Netherlands.—The National Public Health Service of the Netherlands announces that arrangements have now been made with the German government whereby the Rijksmagazin at Amsterdam is to serve as the intermediary for distribution of certain drugs the exportation of which from Germany is now permitted. The list includes aspirin, formaldehyd, iodin, sodium iodid, iodoform, antipyrin, salipyrin, pyramidon, phenacetin, mercury and its salts, salicylic acid, senega, tartaric and citric acid, and all surgical, medical and bacteriologic instruments and equipment, vaccines and serums. The *Nederlandsch Tijdschrift* in publishing this notice gives a long list of other drugs which cannot be obtained in this way, either because there is already an ample supply in the Netherlands or Germany has none to spare. This list includes Peruvian balsam, dressing materials, opium, quinin, phenol, cocain and ipecac. The articles the exportation of which is thus permitted, can be obtained only in lots equivalent to three months' regular use of the drug in question. Orders are to be placed as usual with the wholesale houses and these will fill the orders through the Rijksmagazin.

The Drug Supply in Italy.—A letter from the president of the organized pharmacists of Rome, published in the *Giornale d'Italia*, an Italian daily, gives the soaring prices of certain drugs: acetylsalicylic acid from 10 lire is now 120,

potassium bromid from 5 has risen to 50, and the salicylates from 5 to 50, 80 or 100 lire. A lira is equal to 20 cents of our money. The price of phenol has increased tenfold, benzonaphthol fourfold, chloral nearly as much, thymol nearly four times and chlorate of potash threefold, while others have gone up from 15 to 100 per cent. in price. Notwithstanding this, forty of the pharmacists in Rome have hitherto kept on supplying drugs to their customers at the prices that have been the standard during the last five years. This altruistic action is at a heavy expense to them, particularly as certain large manufacturing chemists in Italy have raised their prices to correspond to those of the imported drugs, while there is no excuse for this in most cases. The Italian daily publishing the letter urges the government to take steps to safeguard the supply of drugs and keep the price within bounds, just as the grain supply has been taken over into the hands of the state.

WAR NOTES

Communicable Diseases.—Advices from Vienna by way of Zurich, say that the Austrian Minister of the Interior states that there are 929 cases of cholera in Austria at present.——Surg. Gen. Otto von Schjerning of the German Army, states that typhoid fever on the western front is very rare owing to the provision of sterilized water for the soldiers, and the antityphoid inoculation.

Vaccination Against Cholera.—The German authorities have ordered that all persons employed on the railroads in the eastern part of the empire are to be inoculated anew against cholera. It is assumed that the time has arrived for a repetition of the vaccination. The *Münchener med. Wochenschrift* relates that General von Ziegler of Vienna, commander of an Austrian cavalry corps, recently died from Asiatic cholera. There has been no other case of cholera in his staff and troop, and he was the only officer of the entire troop who refused to be vaccinated against cholera.

Care of Wounded by English.—Dr. J. C. H. Beaumont, surgeon of the White Star Steamer *Baltic*, who has returned after three months' tour of base hospitals in England and Scotland, speaks of the rapidity in the removal of wounded men from the front to base hospitals. He says that large steamers are constantly crossing the channel between Havre and Southampton, that each has accommodations for 1,200 men, and that by the speed and regularity of their trips it is possible for a soldier wounded at Ypres in the morning, to be in the London Hospital under treatment within twelve hours.

Aid for Belgian Physicians.—The report of the treasurer of the committee of American Physicians for the Aid of the Belgian profession for the week ending Sept. 4, 1915, states that no contributions were received for the week ending Sept. 4, 1915.

Previously reported receipts	$7,814.84
Total receipts	$7,814.84
Previously reported disbursements:	
1,625 standard boxes of food at $3.20	$3,575.00
1,274 standard boxes of food at 2.30	2,930.20
353 standard boxes of food at 2.28	804.84
Total disbursements	7,310.04
Balance	$ 504.80

F. F. Simpson, Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh, Pa.

New Zealand Equips Hospital Ship.—New Zealand has equipped a hospital ship for war service. The ship, formerly the *Mahena*, has been remodeled so that it is now said to be one of the best, if not the best, hospital ship afloat. She has been painted white with green bands and red crosses. The cabins have disappeared and the saloon has been transformed. Two special wards for five patients each, an officer's ward, a noncommissioned officer's ward and ten wards for enlisted men have been put in. The large wards contain sixty-four beds. One row of beds is composed of fixed cots while a second row is so constructed that it will swing with the movements of the vessel. The total number of beds for patients is 388, but if necessary, the officers' and nurses' drawing room can be transformed into a ward for sixty additional patients. Patients are received into the ship through the iron water-tight doors at the ship's side, at the level of the lower deck and are transferred by trolleys and lifts. Elaborate provision has been made for sterilization apparatus, laundry, etc. There are two operating theaters, one for minor and one for major surgery, and a Roentgen-ray room and bacteriologic laboratory are also provided. The staff is housed on the upper decks. No field hospital affords the comfort or security which the *Mahena* provides and it is said that few base hospitals are as well equipped.

LONDON LETTER

London, Aug. 27, 1915.

The War

STILL MORE PHYSICIANS REQUIRED

The War Emergency Committee of the British Medical Association has made a personal appeal to every member of the medical profession for service as a naval or military medical officer if of military age, and if over age, for cooperation, so as to set free the men willing to go. The appeal is meeting with a ready response, and local committees have been set up to make the necessary arrangements. There will be two classes—men under 40, whose services will be accepted for a period of twelve months and who will be liable for service at home and abroad, and men over 40, who may offer their services for a period of six or twelve months. The latter will not be sent to the front, but will be employed in this country (if they join for six months only) or in such stations as Egypt, Malta and Gibraltar (if they join for twelve months). To meet the difficulty of physicians leaving their practices, the committee, acting in cooperation with a local committee, endeavors to protect the interests of those who respond to the call. Responsibility for carrying on the physician's work rests primarily with his neighbors, and frequently physicians have expressed to the committee their deep disappointment at finding that patients fail to appreciate the sacrifice made in giving up a practice built up by years of work. As a principle, people all agree that it is right and patriotic for a physician to volunteer for medical service, but often after arrangements are completed, a patient disregards them and applies to another physician. But this must be expected, for after all the choice of a physician is under all circumstances the right of the patient.

THE MEDICAL ARRANGEMENTS AT THE DARDANELLES

The magnitude and the unusual character of the operations at the Dardanelles have presented a difficult problem to the medical staff. The total number of casualties up to the middle of July was 37,982, of which 8,099 were fatal. The foothold obtained by the British and French for the large forces employed was very limited and was almost everywhere exposed to the enemy's fire, so that no site for a hospital was possible. Even casualty clearing stations had to be shifted, as they were several times shelled out. The wounded brought down from the field ambulances were put as quickly as possible on board barges, and towed out to hospital ships, by which they were taken to the base hospitals at Lemnos, Alexandria and Malta. Within three weeks as many as 20,000 wounded were taken to Alexandria. Many of these had been shot long before they reached the shore. Some of the boats were sunk and others had to turn back full of wounded with scarcely an unwounded man on board. As the hospital ships were insufficient for the large numbers of wounded, the transports which took out the troops had to be utilized. In some cases these refilled so quickly with urgent cases that they returned to the base even before the last of their stores were disembarked. Physicians from field ambulances, with what orderlies could be spared, were put on board. These worked night and day during the return voyage, but often could not render more than the most urgent first-aid treatment. Though each transport carried only three medical officers, a few orderlies and no nurses, they had about 1,000 wounded, and in one case as many as 1,618 for the two and a half days' voyage to Alexandria. Later better arrangements, in the form of transports fitted for use as hospital ships with staffs of four medical officers, six nurses and twenty orderlies, were made. The transference of the wounded from the shore frequently took place under fire. Often the men had dragged themselves or been helped by less severely wounded comrades for about 2 miles to a dressing station. Occasionally aeroplanes dropped shells on the hospital ships, killing some of the wounded.

Excessive Prescribing

As physicians do not supply drugs to their patients under the insurance act (unlike the custom in private practice) they have no interest in economy. The resulting extravagance has been referred to in previous letters to The Journal. A recent report of a Panel (insurance) committee on the subject is instructive. The members of the committee

were of the opinion that it is essential for the panel committee to adopt a settled policy and to carry out that policy with determination. Either they must abandon all care of the drug fund or put down excessive prescribing. That two thirds of the men on the panel can give adequate treatment for an average of less than 36 cents a head per annum shows that excessive prescribing is unnecessary and a waste of public money. They recommended that from time to time warning notices should be sent to those physicians who appeared to be exceeding 50 cents a head, and that no surcharges should be made until the end of the year. Then, after full inquiry into any possibly mitigating circumstances, a surcharge should be recommended of those physicians who continued to prescribe excessively after the warnings. Several reasons were given for this course: Many prescriptions to which exception was taken might be defended if considered alone, but taken in bulk, their successful defense would be impossible. Further, it might fairly be argued that a peculiarly bad case may have caused the amount for any particular month to appear excessive, but at the end of the year, if the average rate of prescribing had been anything reasonable, there should be no excuse for exceeding the 50 cents. A study of the prescriptions in general suggested that some of the excessive prescribers treated symptoms merely, and when at a loss for further treatment gave pleasing drafts of well-flavored mixtures. Thus, they failed to cure their cases, and patients came again and again for medicine, giving these practitioners a fictitious appearance of high sickness incidence. The argument that this is to the advantage of insured persons and to the funds of approved societies did not stand examination for a moment. Such methods of treatment were considered disadvantageous to both. In prescribing, as in most other things, economy and efficiency walked hand in hand.

PARIS LETTER

PARIS, Aug. 19, 1915.

The War

OPERATIVE INDICATIONS IN THE ARMY ZONE

At a recent session of the Société de chirurgie de Paris, Professor Quénu made a report on an important memoir on this subject which has been addressed to the society by Dr. Heitz-Boyer, surgeon of the hospitals of Paris. In surgery, as practiced in the army zone, the following three great divisions may be established: (1) immediate surgery, comprising operations which, if not done instantly, are useless; (2) urgent surgery, that is to say, operations which must be performed within the first twenty or twenty-four hours at most; (3) early surgery, comprising operations of the first two or three days.

1. The operations to be performed on the spot, even if this be on or near the battlefield itself, are not numerous: hemostasis, tracheotomy and the separation of a limb which is held in place by a mere shred of tissue. The hemostasis most frequently consists in placing a Kocher forceps or a tourniquet, very seldom a ligature.

2. The operations of the first twenty or twenty-four hours are much more varied. So far as fractures are concerned, while it is true that operations should not be performed in those cases in which the perforations of entry and exit are small, it should also be remembered that bullets fired from a short distance have explosive effects, producing lacerations comparable to those of fragments of shell. From the point of view of treatment, it is necessary, moreover, to distinguish fractures of diaphyses from fractures of epiphyses. For the first class free opening of the wounds, removal of detached fragments of bone and of those which are held by a shred and which would necrose unless removed, excision of portions of muscle which are comminuted or contused—these measures constitute the procedure to be followed. For fractures of the epiphyses, it is necessary at the outset not merely to open up the wound but freely to excise broken or comminuted osseous tissue. If this preventive excision is not practiced, the necessity for a secondary resection or even an amputation in bad local conditions and extremely bad general conditions will present itself some weeks later.

Articular lesions ought to be cleaned out early, and after having been disinfected, drained liberally. Their prognosis, in fact, is particularly serious, and they urgently demand early operative treatment.

Quénu states that abdominal wounds may be classed in four divisions: (1) tangential wounds involving only the abdominal walls; (2) nonperitoneal wounds with visceral lesions; (3) penetrating peritoneal wounds without visceral lesions, and (4) penetrating wounds with visceral lesions. The first two classes do not call for laparotomy. Wounds of the third class may benefit by it. Laparotomy is the treatment of choice for wounds of the fourth class.

For penetrating wounds of the chest, nonoperative treatment is the rule followed by all surgeons. Heitz-Boyer remarks, however, that in certain gross parietal lesions one ought to disinfect and drain the osseous thoracic seat of the lesion as one would drain that of a limb.

In the class of urgent surgery, it is necessary also to include certain serious wounds of the soft parts, such as wounds of the buttock, the thigh, etc., which should be opened up at once; this measure is a real surgical operation. Finally, those patients who have a number of serious lesions—a frequent case in the present war—present themselves with the maximum of depression, if not of shock; they need to be operated on rapidly after having received epinephrinized serum, etc.

3. For early surgical operations (that is, operations which, for lack of means or time, could not be performed in the first twenty-four hours and which are performed after thirty-six or forty-eight hours or even a little later), surgical centers quite near the army zone are necessary. It is a crime against surgery and against humanity to send such patients on a twenty or twenty-four-hour journey by rail.

A FUND FOR AIDING MEDICAL VICTIMS OF THE WAR

The Association générale de médecins de France, a huge federated organization, fifty years old, has just founded the Caisse d'assistance médicale de guerre for the purpose of aiding medical men who are victims of the war, especially those of the invaded regions. This fund for medical assistance will be administered by a committee composed of representatives of the general association and delegates from the component societies, and has as chairman Dr. Gaucher, professor at the Faculté de médecine de Paris. Members of the honorary committee being formed will be also M. Justin Godart, assistant secretary of war (medical service), our heroic colleague, Dr. Langlet, mayor of Rheims (THE JOURNAL, Nov. 28, 1914, p. 1967, and Dec. 5, 1914, p. 2055), Professor Combemale, dean of the Faculté de médecine de Lille, Dr. Gairal of Carignan, president of the Union de syndicats médicaux, the deans of the medical colleges, the directors of the medical schools, the presidents of the great scientific and professional societies, etc. The president of the republic has very kindly permitted himself to be named as one of the patrons of the society, declaring that he is happy to manifest his sympathy with the medical profession, whose courage and devotion at the front he has often had occasion to appreciate. The total of the subscriptions for the fund at present amounts to 43,725 francs (about $8,745) out of which 22,000 francs (about $4,400) have already been paid in. Subscriptions may be sent to M. le Trésorier de l'Association générale de médecins de France, 5, rue de Surène, Paris.

UTILIZATION OF THE ABILITIES OF MEDICAL MEN

A deputy, M. Piat, has called the attention of the minister of war to the failure to utilize the special abilities of medical men in the medical service. He has especially asked why agrégés and professors of the medical colleges are not given a military rank corresponding to their civil positions and their abilities. The minister of war has replied that the officers of the medical service, like other officers, are subject to the provisions of the law of April 14, 1832, with regard to advancement in the army, and that these rules do not permit the minister to award ranks in the manner indicated by M. Piat. Moreover, the physicians of the reserve (those not belonging to the regular army) need to acquire military and administrative knowledge, which can be obtained only by passing through the successive grades, and technical proficiency would not suffice to enable professors and agrégés of the medical colleges to fill military positions corresponding to their civil positions and their abilities. Notwithstanding the four-year period at the end of which physicians holding the position of *aide-major* of the second class (second lieutenant) are promoted to first class (lieutenant) has been reduced to two years for those who have certain qualifications such as those possessed by professors and agrégés of the medical colleges. The minister added that he had always paid great attention to university positions in forming schedules of advancement.

Marriages

Horace Rowe Taylor, M.D., and Miss Alvis Hogsett, both of Philadelphia, who had been associated as medical missionaries of the Presbyterian Board at San Juan, P. R., August 26.

John Carl Teufel, M.D., Buffalo, Iowa, to Miss Myrta Young of Ainsworth, Iowa, in Davenport, Iowa, August 20.

John Joseph Farrell, M.D., Hannibal, Mo., to Miss Stella Moore of Kansas City, Mo., at St. Louis, in August.

Dean F. Winn, M.D., Atlanta, Ga., to Miss Alexandra Hartmann, at Pachelma, Russia, September 1.

Woodrow Charles Pickering, M.D., to Miss Josephine M. Senter, both of Columbus, Ohio, August 23.

Joseph Moffett Hall, M.D., Minneapolis, to Miss Alberta May Morgan of Sunbury, Pa., August 10.

Nathaniel Garland Keirle, M.D., to Miss Pattie Exum McCoy, both of Baltimore, August 24.

Harry Gill Pamment, M.D., Toledo, Ohio, to Miss Vera Swift of Mohawk, N. Y., August 25.

Theodore Charles Riebe, M.D., Chicago, to Miss Emily Gabrial of Elgin, Ill., August 14.

John Henry Rice, M.D., Quincy, Ill., to Miss Leonora Welsh of St. Louis, August 24.

Joseph Everett King, M.D., to Miss May Dolan, both of Detroit, August 26.

Deaths

William J. Chenoweth, M.D. University of Louisville, Ky., 1853; Illinois Army Medical Examining Board, 1861; aged 92; surgeon of the Thirty-Fifth Illinois Volunteer Infantry and brigade surgeon of volunteers during the Civil War; formerly local surgeon to the Illinois Central and Peoria, Decatur and Evansville railroads, at Decatur, Ill., and consulting surgeon to St. Mary's Hospital in that city; for many years a member of the Illinois State Medical Society; was instantly killed in a collision between his automobile and an interurban car at Cassell's Crossing, Decatur, August 19.

Hoell Tyler, M.D. Dartmouth Medical School, Hanover, N. H., 1881; aged 59; formerly a Fellow of the American Medical Association; assistant physician and assistant medical superintendent of the New York City Hospital for the Insane, Blackwell's Island, from 1881 to 1884; formerly president of the Physicians' Club of Redlands, Calif., San Bernardino (Calif.) Medical Society and Southern California Medical Society; a physician and druggist of Redlands; died at his home in that city, August 25.

James George Harper, M.D. Trinity Medical College, Toronto, Ont., 1885; aged 50; a Fellow of the American Medical Association; surgeon to the Emergency Hospital, Carbondale, Pa.; local surgeon at Carbondale for the New York, Ontario and Western Railroad; while crossing the tracks of the Delaware and Hudson Railroad at Carbondale, in his automobile, August 24, was struck by a train and sustained injuries from which he died in the Emergency Hospital, two hours later.

Henry A. Smith, M.D. Physio-Medical Institute, Cincinnati, about 1852 (license, Washington, registration, 1882; aged 85; for more than sixty years a practitioner of Seattle; surgeon of volunteers during the Indian wars of 1855 and 1856; for eight years resident physician on the Tulalip Indian Reservation; a member of the Washington Territorial Legislature in 1860 and first superintendent of schools of King County, Wash.; died at his home in Seattle, August 16.

Richard Jerome Church, M.D. Minnesota College of Physicians and Surgeons, Minneapolis, 1895; aged 44; formerly a member of the American Medical Association; a member of the North Dakota State Medical Association; local surgeon of the Soo Line at Park River, N. D.; for three years chairman of the Walsh County Board of Health; died at his home in Park River, August 15.

Solomon Bowers Hiner, M.D. Medical College of Ohio, Cincinnati, 1864; aged 77; a member of the Ohio State Medical Association and president of the Lima Hospital for many years; a veteran of the Civil War; died at his home in Lima, August 20. At special meetings of the Allen County Medical Society and the trustees of the Lima Hospital, resolutions were adopted expressing esteem and regret.

Calvin Colton Halsey, M.D. Castleton (Vt.) Medical College, 1846; aged 92; a member of the Medical Society of the State of Pennsylvania and formerly secretary and vice president of the Susquehanna Medical Society, of which he had been a member for sixty years; until recently a Fellow of the American Medical Association; died at his home in Montrose, Pa., August 21.

William Hollinger, M.D. New York University, New York City, 1892; aged 49; a Fellow of the American Medical Association, and for the last nine years a practitioner of Newburgh, N. Y.; a surgeon on duty with the German Red Cross from the outbreak of the war until early in August; died in St. Luke's Hospital, New York City, August 19, from heart disease.

John Milton Edwards, M.D. College of Physicians and Surgeons, Chicago, 1899; aged 41; for several years editor of the college paper, the *Plexus*; formerly of Mankato, Minn.; assistant local surgeon for the Northwestern and St. Paul systems and commissioner of health of Mankato; died at his home in Portland, Ore., August 26, from carcinoma of the rectum.

Frederick P. Leich (license, Wisconsin, 1906), aged 75; a practitioner of Wisconsin for nearly thirty-five years; formerly a clergyman of the Reformed Church; a veteran of the Schleswig-Holstein and Austro-German wars, in which he served in the field hospital; president of the Jackson (Wis.) State Bank; died at his home in Jackson, August 19.

John Randolph McCluggage, M.D. Rush Medical College, 1877; aged 71; formerly a Fellow of the American Medical Association; and president of the South Kansas and Butler County Medical societies; probate judge of Butler County, and one of the oldest practitioners of Augusta, Kan.; died in a hospital in Wichita, Kan., August 22, from heart disease.

Leon J. R. Coria, M.D. University of Minnesota, Minneapolis, 1904; aged 34; a Fellow of the American Medical Association and a specialist on diseases of the eye, ear, nose and throat; a member of the attending staff of the University Free Dispensary, Minneapolis; died at the home of his mother in Minneapolis, August 22, from septicemia.

Robert H. Henry, M.D. Starling Medical College, Columbus, Ohio, 1870; aged 73; a veteran of the Civil War and a member of the city council of Columbus from 1903 to 1906; died in the City Hospital, Columbus, August 19, as the result of a fracture of the skull received in a collision between his automobile and a street car a few hours before.

Amos G. Browning, M.D. Georgetown University, Washington, D. C., 1860; aged 81; once president of the Mason County (Ky.) Medical Society; jail physician to Mason County; surgeon in the Confederate service during the Civil War; for many years a member of the Consular service; died at his home in Maysville, Ky., August 19.

William W. Sheppard, M.D. College of Physicians and Surgeons, Chicago, 1885; aged 66; a Fellow of the American Medical Association; for many years a practitioner of Chicago; but for a short time a resident of St. Petersburg, Fla.; died at his home in Chicago, August 16.

William Scanlan, M.D. Hamline University, Minneapolis, 1896; aged 46; a Fellow of the American Medical Association; city health officer and for seventeen years a practitioner of Fargo, N. D.; died at the sanatorium of his brother in Volga, S. D., August 23, from nephritis.

William Seymour Morris, M.D. New York University, New York City, 1896; aged 42; a member of the Medical Society of the State of New York; a member of the staff of St. Elizabeth's Hospital, Utica, N. Y.; died at his home in Utica, August 25, from heart disease.

Frank William Maloney, M.D. Niagara University, Buffalo, 1891; aged 50; of Rochester, N.Y.; a Fellow of the American Medical Association; a specialist on diseases of the ear, nose and throat; died at his home in Rochester, August 23, from pneumonia.

William Mount Johnson, M.D. Medical College of Ohio, Cincinnati, 1859; aged 79; a member of the Medical Society of the State of Pennsylvania; for many years an esteemed practitioner of Venango, Pa.; died at the home of his son in Meadville, Pa., June 11.

Charles Franklin Mohr, M.D. College of Physicians and Surgeons, Baltimore, 1891; aged 42; of Providence, R. I.;

who was shot and fatally wounded while riding in an automobile near Nayat, September 1; died in the Providence Hospital, September 2.

Reuben W. Van Dyke, M.D. University of Vermont, Burlington, 1907; aged 33; of Malone, N. Y.; a member of the Medical Society of the State of New York; died at the home of his wife's parents in Westport, N. Y., August 11.

Edward Orlando Ellison, M.D. Rush Medical College, 1915; an intern in Cook County Hospital, Chicago; aged 26; was accidentally drowned while swimming in Mouse River, Minot, N. D., where he was spending his vacation.

Elmer E. Bartelt, M.D. University of Leipzig, Germany, 1886, aged 53; of Lamar, Colo.; a Fellow of the American Medical Association; died in a hospital in Denver, August 13, after a long illness and two abdominal operations.

Wilbur Harold Clippinger, M.D. Hahnemann Medical College, Chicago, 1900; aged 37; formerly a practitioner of Mercer, Ohio, but later engaged in the automobile business at Columbus; died suddenly August 8, in Detroit.

Harry O. Cox, M.D. John A. Creighton Medical College, Omaha, 1906; aged 32; a member of the Florida Medical Association and formerly a practitioner of Bartow, Fla.; died in Denver, July 9, from pulmonary tuberculosis.

William H. Case, M.D. (Registration, Ontario) aged 79; died in the City Hospital, Hamilton, Ont., May 15, from the effects of a fracture of the neck of the femur sustained in an accidental fall at his home several weeks before.

James H. Kiser, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1887; for many years coroner of Marshall County, Ind.; also a druggist; died at his home in Inwood, Ind., August 15, from cerebral hemorrhage.

Harry James Mustard, M.D. Rush Medical College, 1913; aged 30; an intern at the St. Louis City Hospital; died in that institution, May 14, from heart failure following an operation for strangulated hernia.

Thomas C. Beeler (license, Oklahoma, act of 1908), aged 30; chief clerk to the First State Board of Public Affairs of Oklahoma; died at his home in Guymon, Okla., August 18, from heart disease.

William Dudley James, M.D. University of Maryland, Baltimore, 1881; aged 55; a practitioner of East Brady, Pa.; died at the Kittanning (Pa.) Hospital, August 14, from cirrhosis of the liver.

Henry Aiken Jones, M.D. New York University, New York City, 1892; aged 47; a member of the Medical Association of Georgia; died at his home in Millen, Ga., August 28, from heart disease.

Paul Smits, M.D. University of Michigan, Ann Arbor, 1897; aged 45; also a druggist; died suddenly at his summer home near Aberdeen, Wash., August 24, from cerebral hemorrhage.

Isaac N. Cromwell, M.D. Willamette University, Salem, Ore., 1875; aged 73; formerly a member of the Oregon State Medical Association; died at his home in Union, about August 11.

James A. Turner, M.D. Louisville (Ky.) Medical College, 1886; a member of the Medical Society of the State of North Carolina; died at his home in High Point, N. C., August 28.

Harry A. Evans, M.D. Chicago College of Medicine and Surgery, 1912; aged 28; of Springfield, Ill.; a member of the Illinois State Medical Society; died in Terre Haute, Ind., August 9.

Philander H. Harris, M.D. College of Physicians and Surgeons, Chicago, 1887; aged 61; of Milwaukee, Wis.; died in St. Mary's Hospital in that city, August 22, after a surgical operation.

Nathaniel Wallis, M.D. University of Vermont, Burlington, 1894; aged 59; of Fitchburg, Mass.; died in the Burbank Hospital, Fitchburg, August 18, from disease of the intestines.

John P. Jackson, M.D. Milwaukee Medical College, 1898; aged 76; a practitioner of Los Angeles, and Milwaukee, Wis., also a dentist; died in a hotel in Muscatine, Iowa, August 14.

Charles A. Archer, M.D. American Medical College, Eclectic, St. Louis, 1891; aged 58; formerly of Warren, Ohio; died at his home in Cleveland, about August 22.

Mary Eva Waidelich, M.D. Women's Medical College of Pennsylvania, Philadelphia, 1914; aged 25; died at her home in Allentown, Pa., August 20, from tuberculosis.

The Propaganda for Reform

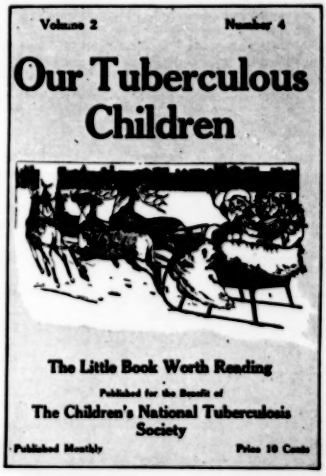
IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

THE CHILDREN'S NATIONAL TUBERCULOSIS SOCIETY

Many inquiries have been received by THE JOURNAL relative to a concern known as the "Children's National Tuberculosis Society" which has its headquarters in Chicago. According to the advertising matter put out by this "society" its president, vice president and secretary are, respectively:

DR. CYRILLE VERMEREN
DR. DAVID H. REEDER
DR. PAUL BURMASTER

The "society" claims to have for its aim "the establishment of homes and camps for tubercular children in every state." It obtains its finances by selling a leaflet. The first number



No longer does the date of issue appear on the cover (or elsewhere) of the pamphlet *Our Tuberculous Children;* the reason may be found in the accompanying article.

of this leaflet is said to have been issued in May, 1913, under the title *Our Tubercular Children;* it sold for 25 cents a copy and the date of issue was printed on the cover. Later the title was changed to *Our Tuberculous Children,* the price reduced to 10 cents and the date of publication no longer appeared. Women and girls who are employed as agents to peddle this pamphlet on the streets, receive from 40 to 50 per cent. of the money they take in. Local managers are appointed who receive 20 per cent. of the total receipts. Out of the 30 per cent. left, the cost of operating the home office and the not inconsiderable expense of printing and publishing the leaflets must come. The balance—what little there is—is said to go to the support of an institution, or "home," the "society" operates in Alamogordo, N. M., although, according to a "local manager" "it takes a lot of money for Dr. Burmaster to travel around and for office rent, etc."

Some interesting side-lights have been thrown on the methods of this concern through the activity of the Cleveland

(Ohio) Chamber of Commerce. This admirable organization, it is stated, saves the people of Cleveland about $90,000 a year by suppressing ill-advised or fraudulent solicitation for alleged charitable purposes. In March, 1915, the Cleveland Chamber of Commerce, through its Bureau of Soliciting Schemes, investigated the "Children's National Tuberculosis Society" because at that time the "society" had a Cleveland

Greatly reduced reproduction of the letter-head of the "Children's National Tuberculosis Society." The "Home Office" address is also the office of Dr. Paul Burmaster and the "Chicago Eye, Ear, Nose and Throat Institute."

representative, one G. W. Patterson. Women agents were making a systematic canvass of Cleveland, the soliciting being under the direction of Patterson, whose business and professional ethics may be judged from the following statement credited to him:

"This world owes every man a living. What difference does it make whether he gets it selling books for charity or any other way? Why, I give a man credit if he can fool the public and get rich, don't you? There are a lot of people who do worse things than this. No one will ever miss that dime, so why should anyone else kick?"

The Cleveland Chamber of Commerce brought to light many interesting things in connection with the methods of the "society." While *Our Tuberculous Children* was issued as early as May, 1913, the Cleveland reports states that the sanatorium was not opened until August, 1914, and

Some letterheads of the "Home Health Club" and the "Home Remedies Company" when these were operated at La Porte, Ind. "Dr." David H. Reeder calls himself "founder" of the "club," and he is president of the "patent medicine" concern.

that as late as December, 1914, there were but two or three "patients." The charitably minded of Cleveland were found to have been relieved of about $2,500 during the five months the "society" was operating in that city. The instructions given to the girls and young women who applied to the Cleveland agency for positions as solicitors were, according to the Cleveland report, to this effect:

"All you need to do," the solicitor was told, "is to hold these books in your arm this way, pull one out and say: 'Won't you buy one of these books to help sickly children?' and you will see how fast you sell them."

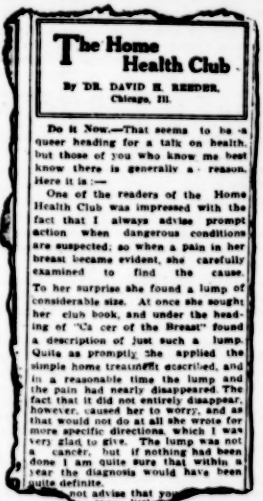
Patterson's explanation regarding the omission of the date from the pamphlets as now sold, was:

"We do not put dates on the pamphlets because you see if we have a lot of copies left over we sell them the next month. I let my agents sell them just the same. For where people buy them separate like that they do not take notice of it."

Of the three men operating this "society" who term themselves "doctors," the following data on file in THE JOURNAL office will be of interest:

PAUL BURMASTER — SECRETARY

Dr. Paul Burmaster, secretary of the "society" and "editor" of *Our Tuberculous Children* was, according to our records, graduated in 1895 by the Hahnemann Medical College of Chicago, receiving an Illinois state license in 1896 and a New Mexico license in 1912. For some years Burmaster has been closely connected with L. D. Rogers and his — now defunct — "National Medical University" of Chicago. The "National Medical University" was, until it went out of existence, a low-grade school of the "sundown" variety. For some time before it went out of existence it was not recognized by the Illinois State Board of Health, nor by many other states. The "Annual Announcements" sent out for several years by the "National Medical University" contained Burmaster's name in such capacities as: (1) "Secretary" of the "National Medical University Corporation"; (2) one of the "Board of Directors" of the same corporation; (3) "Registrar" of the so-called university, and (4) "Professor of Diseases of Eye, Ear, Nose and Throat" of the "university." Furthermore, Burmaster's picture adorned some of these "announcements." In addition, Burmaster was "Secretary of the "National Emergency Hospital," an adjunct to the "National Medical University." This hospital has figured at various times in the police courts and newspapers. Burmaster's name also appears as one of the incorporators of another Rogers' organization, the "International Association of Pan-Pathic Physicians"—whatever that may be. Burmaster's office address is also the "home office" of the Children's National Tuberculosis Society" and the "Chicago Eye, Ear, Nose and Throat Institute."



The Home Health Club

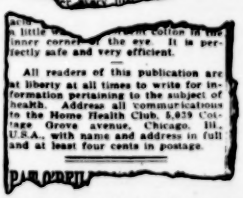
By DR. DAVID H. REEDER, Chicago, Ill.

Do It Now.—That seems to be a queer heading for a talk on health, but those of you who know me best know there is generally a reason. Here it is:—

One of the readers of the Home Health Club was impressed with the fact that I always advise prompt action when dangerous conditions are suspected; so when a pain in her breast became evident, she carefully examined to find the cause.

To her surprise she found a lump of considerable size. At once she sought her club book, and under the heading of "A cer of the Breast" found a description of just such a lump. Quite as promptly she applied the simple home treatment described, and in a reasonable time the lump and the pain had nearly disappeared. The fact that it did not entirely disappear, however, caused her to worry, and as that would not do at all she wrote for more specific directions, which I was very glad to give. The lump was not a cancer, but if nothing had been done I am quite sure that within a year the diagnosis would have been quite definite.

not advise that you



All readers of this publication are at liberty at all times to write for information pertaining to the subject of health. Address all communications to the Home Health Club, 5,039 Cottage Grove avenue, Chicago, Ill., U.S.A., with name and address in full and at least four cents in postage.

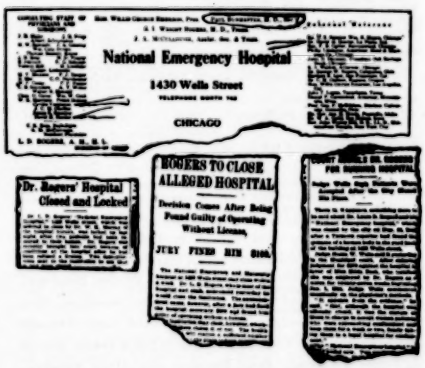
To obtain a "sucker list" for his mail-order "patent medicine" business, Reeder offers to furnish newspapers with "copy" for a "health department" on the understanding that all enquiries are turned over to him. Here is a sample of the "copy."

CYRILLE VERMEREN—PRESIDENT

Dr. Cyrille Vermeren, president of the "Children's National Tuberculosis Society," is, according to our records, a graduate of Rogers' "National Medical University." He, too, seems in the past to have been closely allied with Rogers' disreputable school. According to the "Annual Announcements" of the "National Medical University" Vermeren was "Professor of Psycho-therapeutics" at that institution. He was, furthermore, on the "Consulting Staff of Physicians and Surgeons" of the "National Emergency Hospital." His name appears also in connection with that of Rogers and Burmaster as one of the incorporators of the "International Association of Pan-Pathic Physicians."

"DR." DAVID H. REEDER—VICE PRESIDENT

"Dr." David H. Reeder, Vice President of the "Children's National Tuberculosis Society," is, so far as our records show, not a physician at all. In spite of his lack of qualifications—possibly because of it—his name appeared on the stationery of the "National Emergency Hospital" as one of the "Consulting Staff of Physicians and Surgeons." Reeder


National Emergency Hospital

1430 Wells Street

CHICAGO

ROGERS TO CLOSE ALLEGED HOSPITAL

Decision Comes After Being Found Guilty of Operating Without License

JURY FIXED HIS FINE

Dr. Rogers' Hospital Closed and Locked

The "National Emergency Hospital" was an annex to the "National Medical University," a low-grade medical school now defunct. The "hospital" has received frequent but not flattering notices in the newspapers. Notice that on the "Consulting Staff of Physicians and Surgeons" the names of Reeder and Vermeren appear, while the "Secretary" of the "Hospital" was Burmaster.

lays claims to the degrees of "Ph.D." (university not mentioned) and also "D.O." It seems he used to operate a so-called "Health Sanatorium" in Chicago. Later, his name appears as "President of the Home Remedies Company" of Laporte, Ind. This is a "patent medicine" concern operated on the mail-order plan. For the purpose of getting a mailing list, Reeder offers to furnish certain newspapers with a so-called "Home Health Club" department. Readers of this "department" who desire any information pertaining to the subject of health, are urged to correspond with the "Home Health Club" or with "Dr. David H. Reeder." Those who have written have been solicited to purchase some of Reeder's publications or buy some of his nostrums. Not content with selling its nostrums, the "Home Remedies Company" through Reeder, seems to have attempted to sell stock in the fakery to the public. The "Home Remedies Company" is now doing business in Chicago.

SUMMARY

Summed up, then, the "Children's National Tuberculosis Society" is a self-styled charitable organization in which the bulk of the funds collected seem to go not to the charity in question, but to those who collect them. Three of the officers of the "Society" claim to be doctors. Two of these three have been connected with medical enterprises of a questionable nature, while the third is apparently not a physician but engaged, among other things, in the "patent medicine" business. Reputable associations of business men and reputable organizations for the study and prevention of tuberculosis that have investigated the concern have refused to approve, endorse or countenance the policy or methods of the "Children's National Tuberculosis Society."

Correspondence

Fraternitas Medicorum

To the Editor:—In THE JOURNAL, Aug. 14, 1915, p. 642, there is a letter from Dr. W. W. Jarrell in which he justly calls attention to the rather puzzling expression of a "child's breathing" (in utero) which occurred in an abstract in THE JOURNAL of an article by Ahlfeld in a German medical monthly. He then continues to say: "Or maybe the illustrious Teuton has discovered that the German fetus is equipped with gills. This assumption in a way seems plausible, for at times I am unable to tell if the Teuton is fish, or flesh, or fowl. Now I may be displaying British stupidity, but honestly, Doctor, do German babies breathe in utero, and if so, how?" I am quite sure that I never came across language of such a character in the discussion of a scientific subject in a medical paper. In the appeal which was published in THE JOURNAL, July 31, 1915, p. 451, the attention of medical men and women was called to the high moral standard which the medical profession is occupying in all countries even during this exciting ferocious war. It was expressly stated that it was not the object of the proposed brotherhood to influence the feelings and views of any one regarding the problems involved in the present war—in other words, it is neither a pro-Teutonic nor a pro-Allies organization. "It is desired merely to bring to the full consciousness of the members of the medical profession the exceptional moral position which all civilized nations, even while at war, permit and expect medical men to occupy." It is certainly not too utopian a suggestion to make in the name of the Medical Brotherhood to medical writers, that they abstain from coloring scientific discussions of medical topics with racial and national antipathies. May we not also ask medical editors to use their blue pencil in such cases?

S. J. MELTZER, M.D., New York.
President of the Medical Brotherhood.

Local Applications of Fuchsin in the Urethra and Bladder

To the Editor:—It is with great satisfaction that I am able to report that anilin red, commonly called fuchsin, is a remedy which invariably gives excellent results in acute and chronic diseases of the urethra and bladder, whenever the disease, as usual, is caused by an invasion of any kind of pathogenic germs.

My attention was called to this by Dr. Stable of Redding, Calif., when he reported to me the controlling of pain caused by tuberculous ulcers in the bladder in a patient I had previously examined for him with the cystoscope. At once I began to wonder why I did not think of the use of fuchsin in all the many perplexing cases which defy various treatments.

Cells and elements are readily stained with fuchsin. Gonococci, tubercle bacilli and most other micro-organisms are fuchsinophil. A stained bacillus is always a good bacillus; fuchsin when used in from 0.25 to a 1 per cent. solution penetrates into the deeper layers of the mucosa, and causes no pain and no irritation. I knew that it was used as a local application in diseases of the larynx, and decided at once to try it in the urethra and in the bladder.

In the literature there is nowhere found any mention of the use of fuchsin in genito-urinary practice.

Years ago methylene blue was employed a great deal internally, but the results hoped for did not materialize. Many physicians still cling to its use, probably because it never fails to impress the patient. The concentrations passing through the urine, however, are too insignificant to disturb the life of the diplococcus. It is different with fuchsin; the staining of the mucosa remains for days. It is a tedious treatment, requiring precautions against staining what is not to be stained, careful dosing, and the use of only the best medicinal fuchsin obtainable.

I think that a cautious local application of fuchsin in the ureters and even the kidney pelvis, whenever indicated, ought to give good results. Up to date I have had no chance to try it.

VICTOR G. VECKI, M.D., San Francisco.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

EFFECT OF BLUE COHOSH

To the Editor:—What would be the effect of the administration of 1 dram of tincture of blue cohosh, three times a day, for two months on a full-term fetus at about the time of birth. A primipara indulged in this medication at the suggestion of a neighbor woman who claimed it would make labor easy. The woman had no trouble of any kind during the pregnancy. The movements of the fetus were felt the day before confinement. Pains started in the morning and continued all day. I was called at 8 p. m. and found the uterus dilated and membranes broken, but the patient had not noticed the escape of any fluids. The external parts were covered with a dark slimy material which I believed, at first, was fecal matter, but there was no odor. Later as pains increased I noticed a thick greenish fluid escaping, which also was odorless. The abdomen of the patient was tender. Labor was slow and difficult and terminated at 3:30 the next morning, when a perfectly formed 10-pound boy was born—dead. There was no pulsation in the cord, which was black to the skin. The skin of the baby was mottled with large dark spots from head to foot, which later disappeared, only the cord remaining black and flabby. The placenta and its membranes were dark and soft, but odorless. The mother felt well before, during and after the confinement, and did not develop any symptoms of chills or fever. The history is negative as to anything that might cause her trouble. Quite a few women have used tincture of blue cohosh for the same purpose on advice of the same woman and had no trouble from it.

F. E. N., M.D.

ANSWER.—It does not seem likely that the use of blue cohosh itself could have caused the death of the fetus. In a report of the Council on Pharmacy and Chemistry on some unimportant drugs, it is stated that the basis for the use of this drug was its employment by the American Indians, among whom it had the reputation of favoring the progress of labor. It was formerly official in the U. S. Pharmacopeia, but having failed to sustain its reputation, it was dropped from the eighth revision. Recent literature respecting this drug is mainly from homeopathic and eclectic journals, but is very indefinite as to the actual pharmacologic action of the drug.

Incidentally, it is difficult to conjecture the exact cause of the death of the infant in this case, especially as it is sometimes impossible to determine the etiology of such instances when the case is actually before the observer.

WAR BREAD

To the Editor:—Please let me know the formula for Germany's "war bread" (potato-starch, rye and wheat flour).

M. D. HOGE, Jr., M.D., Richmond, Va.

ANSWER.—A discussion of this subject appeared under War Notes in THE JOURNAL, Jan. 2, 1915, p. 66. According to a decree of the Bundesrat effective Dec. 1, 1914, no bread could be baked of pure wheat flour; it must contain at least ten parts—by weight—of rye flour to ninety parts of wheat flour. Rye bread must be made with at least five parts potato flour to ninety-five parts rye flour. The baker may increase the portion of potato flour, but bread with more than five parts potato flour must be marked with the letter "K" (*Kartoffel*, potato). If there are more than twenty parts potato flour, the figure must be added to the "K." The term "bread" includes loaves, rolls, etc., but not zwieback or cake.

SODIUM CITRATE AND BLOOD TRANSFUSION

To the Editor:—Please refer me to literature pertaining to blood transfusion by the Lindeman method, or methods involving the use of agents to prevent clotting, such as potassium citrate.

J. C. HOLZBERGER, M.D., Brooklyn.

To the Editor:—Please refer me to articles concerning sodium citrate in blood transfusion. We have an excellent field here in Panama for further experimentation in this line.

O. T. BROSIUS, M.D.,
Santo Tomas Hospital, Panama, R. P.

ANSWER.—The following articles may be referred to:

Lindeman, Edward: Simple Syringe Transfusion with Special Cannulas, *Am. Jour. Dis. Child.*, July, 1913, p. 28.

Hustin: Principe d'une nouvelle methode de transfusion muqueuse, *Jour. méd. de Brux.*, 1914, xii, 436.

David, V. C., and Curtis, A. H.: Recent Experiences with Blood Transfusion, THE JOURNAL, March 7, 1914, p. 775.

Lindeman, Edward: Blood Transfusion, THE JOURNAL, March 28, 1914, p. 993.

Weil, Richard: Sodium Citrate in Transfusion of Blood, THE JOURNAL, Jan. 30, 1915, p. 425.

Unger, L. J.: A New Method of Syringe Transfusion, THE JOURNAL, Feb. 13, 1915, p. 582.

Zingher, A.: Simple Syringe Method of Transfusion of Citrated Blood in Children, *Med. Rec.*, New York, March 13, 1915.

Abelmann, H. W.: Blood Transfusion Simplified by Use of New Method and Apparatus, THE JOURNAL, April 17, 1915, p. 1315.

Lewisohn, R.: Sodium Citrate as Aid in Blood Transfusion, *München. med. Wchnschr.*, May 25, 1915.

Krida, A.: Technic of Lindeman's Blood Transfusion, *Albany Med. Jour.*, June, 1915.

Lewisohn, R.: Blood Transfusion by Citrate Method, *Surg., Gynec. and Obst.*, July, 1915.

Helmholz, H. F.: The Longitudinal Sinus as the Place of Preference in Infancy for Intravenous Aspirations and Injections, Including Transfusions, *Am. Jour. Dis. Child.*, September, 1915.

BOOKS ON BLOOD PRESSURE—THE BLOOD PRESSURE OF MORPHIN HABITUÉS

To the Editor:—Please tell me what in your opinion is the best book on blood pressure.

W. B. SHEPPARD, Fort Collins, Colo.

To the Editor:—1. Please refer me to some works on blood pressure. What I should like particularly is the interpretation of manometer reading in life insurance work.

2. Please inform me as to the effect of habitual taking of morphin on blood pressure.

F. W. L., M.D., Cleveland.

ANSWER.—1. The following books may be consulted:

Nicholson, Percival: Blood-Pressure in General Practice, Philadelphia, J. B. Lippincott Company, 1913, price $1.50.

Faught, F. A.: Blood-Pressure from the Clinical Standpoint, Philadelphia, W. B. Saunders Company, 1913, price $3.

Goodman, E. H.: Blood-Pressure in Medicine and Surgery, Philadelphia, Lea & Febiger, 1914, price $1.50.

Morris, G. W.: Blood Pressure, Philadelphia, Lea & Febiger, price $3.

2. Pettey (Narcotic Drug Diseases and Allied Ailments) found high blood pressure uniformly in morphin habitués on admission, but unloading of the portal system resulted in marked reduction of blood pressure. This reduction of arterial tension, he believes, is an essential factor in preventing collapse and other dangerous complications of the withdrawal. In practically every instance after the drug had been withdrawn and the metabolism had been restored to normal conditions, the blood pressure of the individual patient was found to be less than previously.

TREATMENT OF BEE STINGS

To the Editor:—What is the latest and most approved method of treating bee stings? A few days ago I was called to see a patient who had been stung by a honey bee in the scalp one hour previously. I found her very nervous and covered with a scarlet eruption from head to foot, consisting of large wheals and coarse punctate areas. The itching was severe, temperature 97.6, pulse 72, and the lips were swollen to three times their normal size. On this and previous occasions it has required about forty-eight hours for her to recover from the attack.

G. D. KETTELKAMP, M.D., Huntley, Mont.

ANSWER.—The local treatment of bee stings is purely symptomatic, and includes the application of lotions or ointments containing ammoniated water, menthol, potassium permanganate, etc. Waterhouse (*Lancet*, London, Oct. 17, 1914, p. 946) describes a similar case to that mentioned above, and calls attention to the resemblance between these serious effects and the symptoms of anaphylaxis. The treatment is similar to that described in other instances of anaphylaxis with urticaria, antipruritic and sedative preparations being indicated. In THE JOURNAL, Feb. 7, 1914, p. 456, under Therapeutics, the treatment of the local manifestations is given in detail.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARIZONA: Phoenix, October 5-6. Sec., Dr. John Wix Thomas, 200 National Bank of Arizona Bldg., Phoenix.

COLORADO: Denver, October 5. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, October 12. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

GEORGIA: Atlanta, October 12. Sec., Dr. C. T. Nolan, Marietta.

IDAHO: Wallace, October 5. Sec., Dr. C. A. Dettmen, Burke.

ILLINOIS: Chicago, October 13-15. Sec., Dr. C. St. Clair Drake, Springfield.

IOWA: Des Moines, October 19-21. Sec., Dr. Guilford H. Sumner, State House, Des Moines.

KANSAS: Topeka, October 12-14. Sec., Dr. H. A. Dykes, Lebanon.

MASSACHUSETTS: Boston, September 14-16. Sec., Dr. Walter P. Bowers, Room 301, No. 1 Beacon St., Boston.

MICHIGAN: Lansing, October 12-14. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

MINNESOTA: Minneapolis, October 5-8. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

MISSOURI: Kansas City, September 28-30. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

MONTANA: Helena, October 5. Sec., Dr. William C. Riddell, Helena.

NEW HAMPSHIRE: Concord, September 15-16. Sec., Dr. Walter T. Crosby, Pembroke Bldg., Manchester.

NEW JERSEY: Trenton, October 19-20. Sec., Dr. G. H. Norton, 429 E. State St., Trenton.

NEW YORK: Albany, Buffalo, New York, Syracuse, October 5-8. Mr. Harlan H. Horner, Chief, Examination Division, State Education Bldg., Albany.

OKLAHOMA: Oklahoma City, October 12. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.

PORTO RICO: San Juan, October 4. Sec., Dr. Quevedo Baez, Allen St., San Juan.

RHODE ISLAND: Providence, October 7-8. Sec., Dr. Gardner T. Swarts, State House, Providence.

UTAH: Salt Lake City, October 4-5. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

WYOMING: Laramie, October 13-15. Sec., Dr. H. E. McCollum, Laramie.

New Rules in Pennsylvania

The Pennsylvania Bureau of Medical Education and Licensure, July 12, adopted a rule that, after Oct. 1, 1915, in order to receive approval, any school teaching massage and allied branches must maintain as a minimum standard a graded course of instruction of not less than thirty-five hours each week of actual work in didactic, laboratory and clinical study in a single calendar year, this course to include anatomy, physiology, hygiene and practical bedside work. The course in anatomy is to include demonstrations and study from wet dissected specimens of the human body not less than three hours each week for the full period of the course, and the course in practice is to include not less than four hours daily of actual study and manipulation of the living human body.

Other rules adopted provide that (*a*) hereafter the semi-annual examinations will be held in January and July of each year so that a certificate of a full year's service as a hospital intern can be submitted with the application for examination; (*b*) applicants will not be admitted to the examination until they have submitted a certificate of their full year's service as an intern in an approved hospital; (*c*) no hospital on the approved list shall accept an intern who has left another hospital with the disapproval of the authorities of that hospital which he has been serving; (*d*) no applicant for the written examination will be considered if he is a graduate from a school not on the approved list of the bureau, and (*e*) such medical colleges as do not enforce their published rules and regulations governing the admission of students will be dropped from the approved list.

Colorado July Report

Dr. David A. Strickler, secretary of the Colorado State Board of Medical Examiners, reports the oral and written examination held at Denver, July 6, 1915. The total number of subjects examined in was 8; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 13, including 2 osteopaths and 1 nongraduate, all of whom passed. Twenty-two candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
University of Colorado	(1915) 77, 79.7, 80, 86.5, 87.8,	89.6
Hahnemann Medical College and Hospital, Chicago	(1915)	83.2
John A. Creighton Medical College	(1914) 81.2; (1915) 77.6,	81.2
Nongraduate		85

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Leland Stanford Junior University	(1914)	California
Hahnemann Medical College and Hospital, Chicago	(1884)	Illinois
Northwestern University	(1892)	Illinois
Rush Medical College	(1906, 2) Illinois; (1909)	Illinois
Hospital College of Medicine, Louisville	(1898)	Kentucky
Kentucky School of Medicine	(1906)	Kentucky
Louisville Medical College	(1898)	Illinois
Detroit College of Medicine	(1911)	Michigan
Barnes Medical College	(1896)	Missouri
St. Louis University	(1908) Missouri; (1909)	Arkansas
Washington University, St. Louis	(1911)	Missouri
Lincoln Medical College	(1903)	Kansas
Omaha Medical College	(1896)	Iowa
Bellevue Hospital Medical College	(1887)	New York
University of Buffalo	(1900)	New York
Medical College of Ohio	(1891)	Indiana
Miami Medical College	(1897)	Ohio
University of Tennessee	(1912)	Tennessee
University of Pavia	(1910)	Italy

The following questions were asked:

ANATOMY

1. Describe a typical dorsal vertebra. 2. Describe the shoulder joint. 3. Explain anatomically why dislocations of the shoulder joint constitute about 40 per cent. of all dislocations. 4. Describe the fascia lata. 5. Name the "hamstring muscles," giving origin and insertion of each. 6. Describe the popliteal space. 7. Discuss the blood supply of the uterus. 8. Give a full description of the musculospiral nerve. What traumatism is it subject to, and with what definite result? 9. Describe the lesser cavity of the peritoneum. 10. Give gross anatomy of right kidney. What structures are severed when it is exposed by a posterior lumbar incision?

PHYSIOLOGY

1. Describe the histologic structure and functions of the different varieties of blood corpuscles. 2. Discuss the arrangement and function of the lymphatic system. 3. Describe the circulation in the brain, touching upon the arterial supply; the venous supply; the meningeal spaces, and the intracranial pressure. 4. Give in detail the digestive action of the pancreatic juice. 5. Mention the function of the spleen, glomerulus, thyroid gland, adrenal bodies. 6. What are the functions of the hydrocarbon food? 7. Describe the digestion of the carbohydrates. 8. Locate and describe the action of the sympathetic nervous system. 9. Describe the salivary glands as to their location, secretion, innervation and the influence of their secretion on normal digestion. 10. What do you understand by internal secretions? Give example.

TOXICOLOGY

1. Name three narcotic poisons, and give symptoms of two of them. 2. Name three mineral poisons, and symptoms produced by one of them. 3. What are the lethal effects of phenol? 4. What are postmortem findings in oxalic poisoning? 5. What is the general treatment of all cases of acute poisoning? 6. Name three coal tar derivatives having poisonous properties. 7. How is death caused by illuminating gas? 8. Symptoms of plumbism. 9. Contrast symptoms of opium and belladonna poisoning. 10. What disease state resembles opium poisoning. Differentiate.

CHEMISTRY

1. What chemical tests are used to detect albumin in urine? Describe one. 2. Name two chemical antidotes for arsenic and tell how one may be prepared in an emergency. 3. Define a base, acid, salt, alkaloid. 4. Describe one chemical test for blood in feces. 5. What is the relative importance of the element carbon in chemistry? 6. How is nitrous gas prepared, and what are its uses? 7. State concisely what you know of oxygen. 8. What is an ion? 9. What form of sugar is found when Fehling's test is positive? 10. What is synthetic chemistry?

SYMPTOMATOLOGY

1. Discuss pneumococcic infections. 2. Give the signs and symptoms of incipient pulmonary tuberculosis. 3. Give the symptoms and course of acute catarrhal jaundice. 4. Give the symptoms, course and diagnosis of bronchiectasis. 5. Discuss the heart in arterial sclerosis. 6. Give the symptoms of pyelitis. 7. Give the symptoms of anomalous thyroid secretion. 8. Give the symptoms and course of acute anterior poliomyelitis. 9. Describe the Babinski reflex, and tell in what conditions it is present. 10. What is the active cause of syphilis, and what is the effect of the disease upon the circulatory system?

OBSTETRICS

1. Discuss your treatment of a case of normal labor. 2. What instructions would you give to a primigravida (normal) who comes in third month of pregnancy to engage your services? 3. Discuss the causes and treatment of postpartum hemorrhage. 4. Discuss the pathogenesis of puerperal infection caused by the streptococcus group of organisms. 5. Discuss the case of the breasts during pregnancy and during the puerperium. 6. Mention the indications for low forceps. 7. What is the significance of the Abderhalden test? 8. Give the etiology, symptoms and management of albuminuria of pregnancy. 9. Discuss the early diagnosis of eclampsia, and briefly outline the treatment. 10. What will you carry in your obstetric bag?

SURGERY

1. Explain septicemia, sapremia, pyemia. 2. Give the differential diagnosis of aneurysm, abscess, tumor, cyst. 3. Give signs, symptoms, diagnosis and complications of phlebitis. 4. Give the diagnosis and prognosis of bursitis, arthritis, synovitis. 5. Give the symptoms of Pott's disease. 6. Give the causes of intestinal obstruction. 7. Give the symptoms of stone in the kidney. 8. Give the symptoms and causes of pyloric

stenosis. 9. Give the differential diagnosis between fracture of neck of humerus and dislocation of shoulder joint. 10. Define ischemic paralysis, infarction, thrombosis, osteomalacia.

PATHOLOGY

1. What are the causes of a rise of temperature in the body? 2. What are the complications arising from burns? 3. What are the causes of edema? 4. Give the causes of tumor formation. 5. Explain the difference between carcinoma and sarcoma. 6. Give the pathology of nephritis following scarlet fever. 7. Give the pathology of typhoid fever. 8. What are the causes of cardiac hypertrophy? 9. Describe the heart in mitral stenosis, and in aortic regurgitation. 10. What is the difference between congestion and inflammation?

Delaware June Report

Dr. W. H. Briggs, secretary of the Medical Council of Delaware, reports the written examination held at Dover and Wilmington, June 15-17, 1915. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 7, all of whom passed. Four candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Syracuse University	(1913)	79.7
Hahnemann Med. College and Hospital, Philadelphia	(1914)	90
Jefferson Medical College	(1915)	79.9, 87.6
Medico-Chirurgical College of Philadelphia	(1914)	83.6
University of Pennsylvania	(1883)	75
Royal University of Naples	(1906)	85.5

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Yale Medical School	(1909)	R. Island
University of Maryland	(1913)	Maryland
Hahnemann Med. Coll. and Hosp., Philadelphia	(1904) Penna.	Virginia

Ohio June Report

Dr. George H. Matson, secretary of the Ohio State Medical Board, reports the oral, practical and written examination held at Columbus, June 8-11, 1915. The total number of subjects examined in was 11; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 143, of whom 140 passed and 3 failed. Thirty-three candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Rush Medical College	(1914)	83.5
Hahnemann Medical College and Hospital, Chicago	(1915)	83.3
Indiana University	(1915)	85.2
Johns Hopkins University	(1914)	84.4
Boston University	(1915)	84.8
Cleland-Pulte Medical College	(1914)	82.4
Eclectic Medical College, Cincinnati	(1910) 84.4; (1915) 75, 77.6, 80.1, 80.3, 82.1, 82.5, 82.7, 82.8, 83.7, 83.8, 84.7, 84.7, 84.8, 85.3, 85.7, 86.4, 88.8, 89.9.	
Ohio State University College of Medicine	(1914) 78.5; (1915) 79.1, 79.6, 80.1, 81.4, 81.9, 82.6, 83, 83.2, 83.3, 83.8, 83.9, 84.2, 84.4, 84.4, 84.5, 85.2, 85.6, 85.8, 86.2, 86.2, 86.2, 86.2, 86.3, 86.6, 86.7, 86.8, 86.9, 87.2, 87.6, 87.8, 87.9, 88, 88, 88.1, 88.2, 88.5, 88.5, 88.9, 88.9, 89.2, 90, 90.3, 90.5.	
Ohio State Univ., Coll. of Homeo. Med.	(1915) 76.7, 77.4, 77.6, 78, 78.9, 79.9, 80, 80.2, 82.8, 83.4, 83.5, 83.8, 83.8, 84, 85.3, 85.7, 87.3	
University of Cincinnati	(1915) 75.1, 78.7, 79.1, 79.1, 79.5, 79.8, 79.9, 80.8, 81.3, 82.7, 84, 84.1, 84.3, 84.5, 84.7, 85.4, 85.6, 86.5, 88.5.	
Western Reserve University	(1915) 78, 81, 81.6, 81.8, 82.6, 83, 83.6, 83.7, 83.9, 84.8, 84.8, 84.8, 85.1, 85.3, 85.4, 85.4, 85.9, 86, 86.2, 86.7, 86.9, 86.9, 87.1, 87.7, 87.7, 87.9, 88, 88.2, 88.3, 88.8, 88.9	
Jefferson Medical College	(1915)	86.9
University of Pittsburgh	(1914)	83.6
University of Toronto	(1906)	75

FAILED

College	Year Grad.	Per Cent.
Chicago College of Medicine and Surgery	(1913)	71.2
Ohio State University, College of Medicine	(1914)	73.6
Ohio State University, Coll. of Homeo. Med.	(1915)	72.5

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Howard University	(1913, 2) Dist. Colum.,	Kansas
Chicago College of Medicine and Surgery	(1912)	New York
Hahnemann Medical College and Hospital, Chicago	(1913)	Illinois
Northwestern University	(1912)	Illinois
Rush Medical College	(1890) Indiana; (1914)	Illinois
Indiana University	(1910)	Indiana
State University of Iowa, College of Medicine	(1881)	Kansas
Atlantic Medical College, Baltimore	(1909)	W. Virginia
Baltimore Medical College	(1894) Illinois; (1901)	W. Virginia
Coll. of Phys. and Surgs., Baltimore	(1910) Maryland; (1912)	W. Virginia
Johns Hopkins University	(1912)	New York
University of Michigan Medical School	(1907)	Michigan
University of Michigan, Homeo. Med. School	(1914)	Michigan
St. Louis University	(1912)	Missouri
Albany Medical College	(1914)	New Jersey
Columbia University, Coll. of Phys. and Surgs.	(1912)	New York
Cornell University	(1910)	Louisiana
University and Bellevue Hospital Med. Coll.	(1913), (1914)	New York
Jefferson Med. Coll.	(1912) New York; (1913, 2)	Penna., Vermont
Medico-Chirurgical College of Philadelphia (1888)	Neb. (1913)	Penna.
Univ. of Pennsylvania	(1903) New York; (1907) (1909)	(1913) Penna.
Vanderbilt University	(1910)	Illinois

Book Notices

SENESCENCE AND REJUVENESCENCE. By Charles Manning Child, of the Department of Zoology, University of Chicago. Paper. Price, $4. Pp. 481, with illustrations. Chicago: The University of Chicago Press, 1915.

This work is divided into five parts. Part One deals with the problem of organic constitution, or the theories of life, and contains a summary of the author's views. The various theories are taken up in turn, beginning with the Neo-vitalistic. This theory, the chief modern exponent of which is Driesch, assumes the existence of a vital principle as absolutely indispensable for any adequate conception of life. The fatal objection to this theory, however, is that it lacks the essential element of proof, namely, a foundation on fact, and assumes that which it is supposed to prove. In other words, it is based on an undetermined and undeterminable assumption. As all vitalistic theories are based on the same or similar assumptions, the author rejects them all, not only for the reason that the assumption is unprovable, but also for the reason that the facts brought to light by the development of experimental methods and of the physical sciences are showing more and more the improbability of such a principle, and are removing the necessity for one. The author then shows that the same objections are applicable to the various corpuscular theories, such as the gemmules of Darwin, the pangens of DeVries, the physiologic units of Spencer, the biophores and determinants of Weismann, etc., all of which may be called the morphologic or static group. These theories, according to the author, do not help to solve any of the fundamental problems of biology. They merely serve to place these problems beyond the reach of scientific investigation. As all of the various particles of these theories are endowed with the attributes of life as exhibited in the organism, the study of life is simply removed from the organism to the corpuscle, and nothing is gained thereby.

With the development of chemistry, it became apparent that chemical action played a very important part in life processes, and the chemical theory of life rapidly came to the front. Life consisted in the changes which were constantly taking place in the extremely complex protein molecules called protoplasm. These protein molecules were regarded as highly labile chemically, so that they were able to respond to stimuli of various kinds by decomposition and the very rapid liberation of energy. It soon became apparent that it was necessary to distinguish between living and dead protein. The difficulties were overcome by assuming that liability is the property only of living proteins, and disappears with death. "Death, in fact, was regarded as resulting from this change from liability to stability." The author analyzes the chemical theory and points out its insufficiencies. He says: "It appears, then, that when we analyze this hypothesis of the labile proteid substance which gives rise to the manifestations of life by its chemical transformations, we find that it does not help us to any great extent in bridging the gap between the organism and the inorganic world. . . . The numerous difficulties which arise in connection with hypotheses of this character must at least raise the question whether the point of view on which they are based is fundamentally correct. Is life at bottom simply a complex of chemical reactions or is there some other factor involved which the hypothesis of the labile corpuscle as the basis of life fails to take into account?" This the author attempts to answer in his discussion of the physicochemical theory. In this section it is pointed out that the complexity of the protein molecule is not so great as

it was formerly believed, but that it is built up from certain relatively simple compounds. The proteins exist in the colloid conditions. "Protoplasm, instead of being a peculiar living substance, with a peculiar complex morphological structure necessary for life, is on the one hand a colloid product of the chemical reaction, and on the other a substratum in which the reactions occur, and which influences their course and character both physically and chemically. In short, the organism is a physico-chemical system of a certain kind."

"In every living organism known to us the chemical processes of metabolism take place in the complex colloid field or substratum. . . . The properties of these substances as colloids are no less important for the living organism than their chemical constitution. . . . The more we know concerning colloids the less possible it becomes to conceive of anything similar to what we regard as life apart from them. Whatever else it may be, it seems certain that the organism is a colloid system. From this point of view, our definition of a living organism must be somewhat as follows: A living organism is a specific complex of dynamic changes occurring in a specific colloid substratum which is itself a product of such changes and which influences their course and character and is altered by them."

The question of morphology and the relation between structure and function are discussed, the author concluding that neither structure nor function is conceivable except in relation to each other, and that structure and function are, therefore, indissociable.

The second chapter of this work deals with the life cycle. In it are discussed growth and reduction and senescence and rejuvenescence. Senescence is defined as "a decrease in rate of dynamic processes conditioned by the accumulation, differentiation, and other associated changes of the material of the colloid substratum." It is, therefore, a necessary and inevitable feature of growth and differentiation. Rejuvenescence is an increase in rate of dynamic processes conditioned by the changing in the colloid substratum in reduction and dedifferentiation.

Parts Two, Three and Four, forming about three fourths of the entire work, contain a great mass of experimental and other data, which form the basis of the author's conclusions. Part Five, which closes the work, is theoretical and critical, and contains a review of some current theories on senescence and rejuvenescence, ending with some general conclusions. The whole subject seems to be well summed up in the last sentence: "The age changes in the organism are merely one aspect of *Werden* and *Vergehen*, the becoming and passing away which make up the history of the universe." The whole work is extremely interesting, and shows an immense amount of research and study on the part of the author. Extensive references to the literature follow each chapter, and a comprehensive index closes the volume. The reading of this book cannot help but be of value, even to one who always looks to the practical end of things; for anything which helps to give to the physician a clearer insight into life's processes must make him a better doctor.

TEXT-BOOK ON NERVOUS DISEASES. By G. Aschaffenburg, H. Curschmann, R. Finkelnburg and others. Authorized English edition edited by Charles W. Burr, B.S., M.D., Professor of Mental Diseases in the University of Pennsylvania. Two volumes. Price, $12 net. Pp. 1132, with 246 illustrations. Philadelphia: P. Blakiston's Son & Co., 1915.

Written by authors of international reputation as clinicians and research workers, and edited by Curschmann, this textbook has at last been translated into English. The German edition bears the date 1909, and has already become an oft-quoted classic. Originally intended for students and practitioners, it has also become popular with neurologists. For the general practitioner Curschmann's book is what Oppenheim's textbook is for the special student of neurology. Like Oppenheim's book, it covers the subject of neurology in a complete and up-to-date manner, but, unlike that famous classic, it addresses the practitioner in a conversational style easy to follow. The illustrations are excellent, there being many colored original drawings among them. The article of Max Rothmann on the diseases of the cord, that of Liepmann on diseases of the brain, and Krause's section on operative treatment of nervous diseases are excellent. In addition, the splendid article of L. R. Müller on diseases of the conus and the cauda equina, with its illuminating differential diagnostic considerations, as well as the articles of Aschaffenburg and Curschmann, deserve special praise.

The American editor in the preface states that "the translators have endeavored to do their work faithfully and to give an accurate rendering of the writer's statements." We regret that the translators have been too accurate and subservient to the German text. When will American translators learn that literalness of translation is not the equivalent of accuracy? In our opinion, it is not essential to be constantly reminded that one is reading a foreign work when perusing a translation. Englishmen long ago learned to render good translations of foreign books. Is any one, for instance, conscious on reading Tanzi's textbook on mental diseases in English that the book is a translation from the Italian? This much for the translation. The special chapter contributed by the American editor on the diagnosis and treatment of neurasthenia, psychasthenia, hysteria and borderland mental states, though incomplete is a valuable addition. The entire book has intrinsic merit, and will no doubt find favor with the English-speaking physician.

THE MEANING OF DREAMS. By Isidor H. Corist, M.D., First Assistant Visiting Physician for Diseases of the Nervous System, Boston City Hospital. Cloth. Price, $1. Pp. 194. Mind and Health Series. Boston: Little, Brown & Co., 1915.

The author believes that Freud's interpretation of dreams represents "one of the greatest advances ever made in our knowledge of the human mind and of human motives." He compares the value and importance of dream analysis with the discovery of the origin of species and the theory of evolution, and is inclined to call Freud a second Darwin. According to the same author, dream analysis not only helps us to fathom the mysteries of the unconscious, but also has given to medicine one of its most potent weapons to combat certain functional nervous disturbances. Having made these extravagant statements, he proceeds to analyze several dreams according to the freudian method in a style and manner easily grasped. Indeed, any one can readily learn the great art of dream interpretation by following the author's model prescriptions. This little volume, containing as it does nothing original, has the merit of being less involved than Freud's padded book on the interpretation of dreams. While ostensibly writing on the meaning of dreams, he really injects his own meanings into otherwise quite harmless dreams, and makes them fit his own sex conceptions derived from the freudian sex nursery.

MATERIA MEDICA AND THERAPEUTICS. A Text-Book for Nurses. By Linette A. Parker, B.Sc., R.N., Instructor in Nursing, Teacher's College, Columbia University. Cloth. Price, $1.75 net. Pp. 311, with 32 illustrations. Philadelphia: Lea and Febiger, 1915.

The author has described all the more important and most commonly used drugs, and has given information concerning them which will enable the nurse to administer them intelligently. Drugs are classified according to the part of the body on which they act: nervous system, circulatory system, etc. Under "Analgesics," attention is directed to the danger of coal-tar remedies and "patent medicines." Other remedial measures described are psychotherapy, hydrotherapy, electrotherapy, serums and vaccines and ray therapy. The illustrations, particularly plates which show plants in natural colors, are interesting.

AMNESIA AND ANALGESIA IN PARTURITION (TWILIGHT SLEEP). By Alfred M. Hellman, B.A., M.D., F.A.C.S., Adjunct Attending Gynecologist and Obstetrician, Lebanon Hospital. Cloth. Price, $1.50 net. New York: Paul B. Hoeber, 1915.

The present rejuvenation of "twilight sleep"—largely an artificial interest created by the lay press—has prompted the issuing of several books on the subject. In the author's note to the present book, he gives special thanks to his publisher, at whose request the book was written. The author's aim was to give a summary of the literature, and he seems to have done this quite satisfactorily.

Miscellany

The Internal Secretions and the Interrelationship of the Various Organs

The modern theory of the influence of internal secretions was foreshadowed, according to J. J. Abel (*Science*, Aug. 6, 1915, p. 165), in the eighteenth century. Abel says that even from remote antiquity it has been known that the gonads or sex glands exercised a marked influence on the development and structure of the body, but the means by which this influence was exercised was unknown. The medicine of an older time used the term *consensus partium* to indicate the harmonious accord of organ with organ. Until quite modern times the nervous system was supposed to be the sole medium through which this *consensus* of the various organs was effected. Yet, meanwhile, the old humoral theory, revivified by Harvey's discovery of the circulation, sought to establish the importance of the blood stream in regulating the interrelationship of the organs.

In 1775, Théophile de Bordeu, whom Abel describes as a fashionable practitioner of Montpellier and later of Paris, "propounded the doctrine that every organ lives its own life and is the source of specific chemical substances (*humeurs particulières*) which are yielded up to the blood and which are necessary to the integrity of the body." The blood, Bordeu maintained, "contains an extract of each glandular organ which contributes its share to the emanations in which all the solid parts [of the blood] swim. . . ."

The first experimental evidence in support of this theory was furnished three quarters of a century later, by A. A. Berthold, professor of physiology in Göttingen. Berthold transplanted the sex glands of young cockerels from their normal position to the outer surfaces of the intestine in the peritoneal cavity. The birds showed none of the changes which distinguish the castrated fowl; in vocal capacity, desire for battle, growth of comb and wattles and sexual instinct, they remained male birds. Berthold concluded that, in addition to the reproductive function, the sex glands have an important function in maintaining the *consensus partium* through their influence on the blood.

Berthold's observations were forgotten and had no apparent influence on work during the half century which followed. It remained for Claude Bernard, Brown-Séquard, Basedow, Graves, Addison and many others of a later period to build up the structure of the theory of the endocrine glands.

The Number and Kind of Drug Addicts

M. I. Wilbert, of the United States Public Health Service, in *Public Health Reports* calls attention to the fact that many of the statements as to the number of drug addicts in the United States are not based on reliable data. Others, while partially true, are misleading because of their incompleteness or because of partial misstatement of fact. The number, he believes, does not even approximate the large number which has been sometimes claimed. Among the statements which he quotes as being incorrect are that more than 2 per cent. of the people in this country are addicted to the use of opium and cocain, and that this number is being augmented at the rate of 100,000 a year; that fully 90 per cent. of the opium we import is used for illegitimate purposes; that for every ounce of cocain employed legitimately, there are 200 ounces sold illegitimately; that physicians are responsible for at least 95 per cent. of the habitual users of opium, its compounds and alkaloidal salts; that more dope fiends have been created by the refilling of prescriptions than in any other way, and that at least 10 per cent. of the 45,000 drug stores in the country exist largely on the illegitimate sale of habit-forming drugs. Wilbert says that the total amount of opium and cocain brought into the country is pretty well known, and he makes the calculation as to the probable number of doses and the proportion that could possibly be used illegitimately. From this he concludes that the number of addicts must be grossly exaggerated. He quotes the figures of Lucius P. Brown, state food and drugs commissioner of Tennessee, in the *American Journal of Public Health*, in which Brown says that after twelve months of operation of the Tennessee anti-narcotic law, there were registered in the state 2,370 habitués of all ages and colors. The average consumption per day for morphin was 8.5 grains, or approximately 1,000 doses each month or 12,000 doses a year. As the state of Tennessee contains slightly more than 2 per cent. of the population of the United States, at the same ratio there would be a little over 118,000 drug habitués in the United States, and these would consume nearly a billion and a half of doses at the same rate. This is about six times the total importation of opium. Making a calculation of the amount of cocain brought into the country and the amount said to be used by cocain addicts, the estimate has been made that there are 150,000 users of cocain. This estimate has been made on the basis of 1 ounce of cocain per habitué per year. Steinmetz, however, has found in a study of fifteen cases that the daily quantity taken was from 20 to 60 grains, which would give a total quantity in the year of about 15 ounces. Calculating from the 325,000,000 doses of coca leaves and cocain said to be brought into the United States yearly, the estimate of 150,000 would be much too high.

Wilbert calls attention to the large hole left in the Harrison law by Section 6, which permits of the use of narcotic drugs in certain nostrums. He says that as long as the drug fiend can get sufficient of a nostrum containing his favorite drug, the rest of the Harrison law will be a matter of indifference to him. Wilbert concludes that though the amounts of opium and coca consumed annually in this country are out of all proportion to the actual need for medicinal purposes, the number of addicts is certainly not so high as has been claimed; but to locate the existing leaks, the followers of all branches of medicine, particularly pharmacists, must purge themselves of even a suspicion of being directly or indirectly to blame for existing abuses either in the unauthorized refilling of prescriptions or otherwise.

Origin of Jitney Bus

The jitney bus originated in the West, writes E. Gordon Lee, in the August *Case and Comment*. The term is applied to any automobile or mechanically driven bus carrying passengers for a 5-cent fare. The word "jitney" in western parlance is equivalent to our eastern nickel. The expression is said to be a corruption of a Japanese term for a small coin of such little value that it is usually spoken of with great contempt. Others believe the word to be of negro origin, and assert that in the old days of the Mississippi steamboats the dock roustabouts were wont to refer to a nickel as a jitney. Another account avers that a penitentiary trusty named Jedney used to smuggle tobacco, sugar and other supplies to the prisoners, giving them 5 cents' worth for 10 cents, thus resulting in a nickel profit to himself, the transaction being obscurely referred to as a jitney.

It is said that the first jitney bus appeared in Oakland, Calif., when a second-hand automobile stopped at the curb bearing the placard, "Will take you anywhere, or stop anywhere, for one jitney." About a year ago one L. R. Draper, a citizen of Los Angeles, started a business of this kind in that city, and many regard him as the originator of the idea. Be that as it may, California is certainly responsible for setting up the most rapid disturbance in city transportation this country has ever seen.

Inheritance.—A good cricketer may be the father of a good cricketer, not because he has acquired the art of bowling and batting, but because he has the correct eye, hand and brain, which was bred in him, and which he may transmit to his son; nor must we forget the force of tradition and of example, which may technically be called the liberating stimulus which induces the son to follow in the footsteps of his father.—F. M. Sandwith, *Clinical Journal*.

Medicolegal

Practicing as a Nondrug-Giving Physician

(State vs. Siler (N. C.), 84 S. E. R. 1015)

The Supreme Court of North Carolina says that the defendant was tried and found guilty, in the municipal court of Greensboro, of practicing for fee and reward, without license, as "a nondrug-giving physician." On appeal to the superior court of Guilford, on a special verdict finding the facts, the judge held the defendant not guilty, and the state appealed. The Supreme Court reverses the latter judgment. It holds that on the special verdict the lower court should have held the defendant guilty. The Supreme Court says that it was agreed that the defendant was resident in Greensboro April 14, 1914, and on that day was engaged in the practice of "chiropractic and suggesto therapy" as a nondrug-giving physician, and received compensation therefore; that chiropractic is a system of treating human diseases without use of drugs by manipulating the spine, and that suggestotherapy is a system of treating nervous diseases without the use of drugs by mental suggestion. By the act of 1907 (Chapter 764) it was intended to protect the public against imposition by those claiming to heal diseases without the use of drugs as osteopaths. Since then those claiming to heal without prescribing drugs have taken various and numerous appellations, and thus avoided the protection intended to be afforded the public as to "nondrug-giving physicians" by the act of 1907. In consequence, the act of 1907 was amended in 1913 to add after the word "osteopathy" the words "or other nondrug-giving school of practice." The act also fully and elaborately prescribes that it shall apply to all practice of healing of every kind that is not drug-giving, excepting only "Christian Scientists or masseurs or any one following in his or her practice the orders of licensed drug-giving physicians." The object of the act of 1913 is simply to extend the protection to the public given by the act of 1907, as against all other nondrug-giving practitioners of healing, with the exception just quoted. That this is the scope of the act, and that it is not intended to make compliance therewith a monopoly in the hands of "osteopaths," the act prescribes an examination only in the following subjects: "anatomy, physiology, pathology and diagnosis." Less could not be required reasonably of any one holding himself out as competent to prescribe for "the ills that flesh is heir to." The intent of this statute is clearly and solely for the protection of the public. An uneducated, ignorant and incompetent doctor turned loose on a helpless community is as deadly as a park of artillery.

Not Liable for Amputation of Leg—Admissibility of Evidence

(Barfield vs. South Highland Infirmary et al. (Ala.), 68 So. R. 30)

The Supreme Court of Alabama in this action for alleged malpractice affirms a judgment in favor of the defendants, and denies a rehearing to the plaintiff. The court says that the defendants were the infirmary and a surgeon, whom the plaintiff charged with having wrongfully and without her consent amputated one of her legs. The infirmary was not liable because the medical and surgical treatment and operation were prescribed and performed by the surgeon under an independent employment by the plaintiff, and he, though he was a shareholder and officer of the infirmary, in treating and operating on the plaintiff acted not at all as the agent of the infirmary nor within the line and scope of his authority as an officer. Beyond question or doubt any negligence, unskilfulness, or other wrong, if any there was, was his wrong, and for it he alone was responsible.

It scarcely need be debated that the plaintiff, if capable of intelligent consideration of the question involved, had the absolute moral and legal right to determine the issue for herself with regard to having the amputation, and an operation of this capital character, performed without regard to her wishes in such case, could not be justified in any forum of law or conscience. But considering the incapacity she claimed to have labored under at the time, and the extreme urgency of the case as shown by the expert evidence, if believed, it was proper for the defendant to consult with the mother—and not conceivably improper in any event—and to act on her consent as the implied consent of the plaintiff. Moreover, his testimony was admissible that a nurse came down and said that the plaintiff was willing to have her leg cut off. Under the circumstances which appeared, no negligence could be charged to the defendant in accepting this statement and that of the plaintiff's mother as expressing the true state of the plaintiff's mind; at least these statements, though falling in the general class of hearsay, went a part of the way toward demonstrating the defendant's good faith in performing the operation which the plaintiff charged was performed without her knowledge or consent. And if the plaintiff was wholly incapacitated to consent, the defendant may have been justified in acting on a consent, not actually given, but to be implied on considerations of custom, humanity and reason.

The defendant was a witness, qualified as an expert on the questions involved. The jury was entitled, in a general way, to be informed of his opportunities for observation and experience in his line, and in general to know what manner of man he was. Within this rule, without prejudice to the plaintiff's case, and without conveying any intimation that such conditions affected the rule of due care, the jury might be given to understand whether the defendant was young or old, did a large practice or none at all, resided in Birmingham or Toad Vine, and other like things, and the court does not see that it makes any difference in principle that inquiries to this end were directed to another witness rather than to the defendant himself. Again, the defendant had a right to consider the charts or records kept by the nurses in determining his treatment, and the jury was properly allowed to have these charts before it as part of the evidence in the case, though doubtless they signified little to any but the skilled professional mind.

Nor was there error in a refusal to instruct the jury that in determining the defendant's liability they should not consider the fact, if it was a fact, that another surgeon or physician had made a failure in an attempt to treat the plaintiff's leg, and had made it probable that the plaintiff would lose her life if the leg was not amputated. To so instruct would be manifestly wrong. A question as to what the defendant charged for what he did was presumptively inadmissible. He was normally and legally bound to exercise the same degree of care, diligence and skill, whether his charge was large or small.

A Valid Medical Practice Act Imposing $50 License Fee on Vendors

(Ex parte Ambler (Okla.), 148 Pac. R. 1061)

The Criminal Court of Appeals of Oklahoma holds that the writ of habeas corpus obtained by the petitioner, who had been convicted of violating the medical practices act embraced in sections 4242-4264 of the Compiled Laws of 1909, section 4260 being the particular section covering the offense charged, should be discharged, and the prisoner remanded to the custody of the sheriff to be dealt with as the law provides. The court says that it is of the opinion that the act is a valid law, enacted within the reasonable exercise of the police power of the state, and a wholesome provision which infringes on no constitutional provision of Oklahoma or of the United States.

Section 4260, relating to peddlers of medicine and medical appliances, provides that an annual county license fee of $50 shall be paid by all such itinerant vendors, doing business in any county in the state, said sum to be turned over for the use of the county road and bridge fund of said county. It appears that the most that can be said against the Oklahoma medical practices act is that the title is broader than the

enacting part, and covers, or might be construed to cover, another subject, that is, the licensing of vendors; but by a careful examination of the body of the bill it is easily to be determined that it relates only to such things as pertain to the practice of medicine. If no reference had been made to vendors in the title, that section of the act which relates to vendors of medicine and medical appliances could have been properly included in the measure because such a provision is referable and cognate to the subject expressed in the title, and constitutes only a part of a complete enactment as a complement to the main thought therein expressed. This being true, the fact that the word "vendors" was not followed by the words "medicine and medical appliances," in the title of the act, was immaterial.

The contention is without merit that the medical practices act is a revenue measure, and that it did not originate in the House of Representatives, and was not passed more than five days prior to adjournment, and for that reason is in conflict with the state constitution. Revenue is a mere incident to the law, and not its primary purpose. If the $125 license fee imposed by a similar law under a similar constitutional provision in the state of Minnesota does not have the effect of converting the act into a revenue measure in that state, then the $50 license fee as imposed here certainly does not convert the act into a revenue measure. This court is not inclined to twist a construction out of these enactments that will thwart the will of the people, expressed through the legislature, and especially so when such construction is unsupported by reason or authority. The legislature of Iowa enacted a law almost identical with the medical practices act of Oklahoma, except that in Iowa $100 was imposed, instead of $50, and it was held to be a reasonable police provision. Nor is the statute invalid because the fees provided for are to be used for other purposes, and not for the purpose of enforcing the law under which they are imposed.

Society Proceedings

COMING MEETINGS

American Academy of Ophth. and Oto-Laryn., Chicago, Oct. 5-7.
Amer. Assn. of Obstetricians and Gynecologists, Pittsburgh, Sept. 14-16.
American Association of Railway Surgeons, Chicago, Oct. 13-15.
American Electro-Therapeutic Association, Atlantic City, Sept. 14-16.
American Roentgen Ray Society, Atlantic City, Sept. 22-25.
Association of Military Surgeons of the U. S., Washington, Sept. 13-15.
Colorado State Medical Society, Denver, Oct. 5-9.
Delaware State Medical Society, Wilmington, Oct. 11-12.
Idaho State Medical Association, Lewiston, Oct. 6-8.
Indiana State Medical Association, Indianapolis, Sept. 23-24.
Kentucky State Medical Association, Louisville, Sept. 21-23.
Medical Association of the Southwest, Oklahoma City, Oct. 12-13.
Minnesota State Medical Association, Rochester, Sept. 29-Oct. 1.
Mississippi Valley Medical Association, Lexington, Ky., Oct. 19-21.
Missouri Valley Medical Society, Des Moines, Sept. 23-24.
Pennsylvania State Medical Society, Philadelphia, Sept. 20-23.
Utah State Medical Association, Salt Lake City, Sept. 28-29.
Virginia State Medical Society, Richmond, Oct. 26-28.
Wisconsin State Medical Society, Milwaukee, Oct. 6-8.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

August, LXXII, No. 2, pp. 209-384

1 *Complications of Ovarian Tumors. S. Wiener, New York.
2 Pelvic Varicocele. E. W. Pinkham, New York.
3 *Relation of Albuminuric Retinitis to Toxemias of Pregnancy. J. R. Miller, Baltimore.
4 Psychoses and Neuroses of Pregnancy and Puerperium. D. J. McCarthy, Philadelphia.
5 Cesarean Operation; Its Wider Application; Report of Cases. W. E. Parke, Philadelphia.
6 Mitral Disease and Gestation; Report of Cases. D. Longaker, Philadelphia.
7 Shoulder Presentations; Report of Three Cases. G. M. Astley, Philadelphia.
8 Technic Applying Heat in Treatment of Inoperable Uterine Carcinoma. J. F. Percy, Galesburg, Ill.
9 Inversion of Uterus; Report of Case of Complete Inversion with Prolapse. H. L. D. Kirkham, Houston, Texas.
10 Roentgen Ray Diagnosis of Pregnancy. A. M. Judd, Brooklyn.

1. **Complications of Ovarian Tumors.**—This paper is based on a series of 240 consecutive operations for ovarian tumor. As there were bilateral tumors in twenty-nine cases, there were *269* tumors in all. Torsion was encountered thirty-three times in *269* tumors (*12.26* per cent.). There were five cases of rupture of the cyst wall. There were six cases of infected cysts (*2.23* per cent.). There was one case of streptococcus infection, one mixed infection of *Streptococcus pyogenes* and *Staphylococcus albus*, one case of typhoid infection, in one case culture showed no growth, and in two cases the organisms were unidentified. There were five cases of malignant degeneration in benign growths, three times there were squamous cell carcinomas developing in dermoid cysts; once a papillary adenocarcinoma developing in a serous cystadenoma; and once an adenocarcinoma developing in a pseudomucinous cystadenoma. There were eleven operations for ovarian tumor complicated by pregnancy. In only two of these was the operative interference followed by uterine contractions of sufficient strength to discharge the products of conception. Including under the term "ascites" only the presence of considerable transudate in the peritoneal cavity, there were twenty-one cases in the series. Eleven times ascites (mostly blood tinged) was found with carcinomas; once with an uncomplicated papillary cystadenoma; five times with tumors with twisted pedicle (one fibrosarcoma, two papillary cystadenomas, one simple cystadenoma, one multilocular pseudomucinous cystadenoma); once with an infected dermoid cyst; and three times with simple uncomplicated fibromas. There were of uterine fibroids, 4 cases; chronic metritis or "fibrosis uteri," 3 cases; retroflexion, *2* cases; hydrosalpinx, 5 cases; gonorrheal salpingitis (chronic), 4 cases; pyosalpinx, *2* cases; incomplete abortion, 1 case, and ectopic gestation, *2* cases.

3. **Toxemias of Pregnancy.**—In Miller's experience albuminuric retinitis of pregnancy affords evidence strongly indicative of primary nephritis, though it is not always present in cases of nephritic toxemia. He says that the retinoscopic examination, when positive, enables one to make an early diagnosis of the underlying kidney condition, which at present, is sometimes impossible without necropsy findings or extended observation.

American Journal of Public Health, Boston

August, V, No. 8, pp. 687-809

11 Public Health Authorities and Campaign Against Cancer. C. E. Lakeman, New York.
12 Midwives: Their Influence on Early Infant Mortality. C. C. Terry, Jacksonville, Fla.
13 Reliability of Certain Classes of Death Certificates. H. Emerson, New York.
14 Public Health as Affected by Chronic Diseases of Heart, Kidneys and Arteries. H. Greeley, Brooklyn.
15 Results of Studies on Dust and Bacteria Content of Air of Cities. M. C. Whipple, Cambridge, Mass.

American Journal of Roentgenology, Detroit

April, II, No. 6, pp. 709-748

16 Roentgen Examination of Foreign Bodies. G. W. Grier, Pittsburgh.
17 Hard Roentgen Rays. W. D. Coolidge, Schenectady, N. Y.
18 Protection Necessary When Using Harder Roentgen Rays. H. W. Van Allen, Springfield, Mass.
19 New Position in Radiographing Shoulder Joint. W. S. Lawrence, Memphis, Tenn.
20 Radium and Mesothorium in Conjunction with Roentgen Therapy. R. H. Boggs, Pittsburgh.
21 Portable Viewing Box. J. M. Berry, Albany, N. Y.
22 Characteristic Roentgen Findings of Duodenal Ulcer. P. Eisen, Milwaukee, Wis.

Boston Medical and Surgical Journal

August 26, CLXXIII, No. 9, pp. 301-336

23 Acute Tubercular Inflammation of Ileocolic Glands Simulating Appendicitis. H. Gage, Worcester.

24 *Use of Digitalis in Various Forms of Cardiac Arrhythmia. H. A. Christian, Boston.
25 *Relationship of Abnormal Heart Beat to Prognosis. P. D. White, Boston.
26 *Treatment of Heart Disease. F. C. Shattuck, Boston.

24. Use of Digitalis in Forms of Cardiac Arrhythmia.—An important evidence of the beneficial action of digitalis, Christian says, is the decrease in the pulse deficit, namely, in the difference between apex beat and radial pulse. In using digitalis it is particularly important to keep this effect in mind, for if one counts the radial pulse alone there may be no particular change in pulse rate, though the number of cardiac contractions has been materially decreased. In fact, in this form of cardiac arrhythmia the counting of the radial pulse may be misleading, it being within normal limits when actually the heart is beating very rapidly. To count the heart beats with the stethoscope is the all-important thing, not the counting of the radial pulse. Digitalis impedes conduction in the His bundle, and the result is that fewer auricular contractions send through impulses to originate ventricular contractions and so the ventricle beats more slowly. Beating more slowly, there is more time for the ventricle to fill and more time for the muscle to recover from fatigue, so the systolic output is increased. Probably, also, digitalis exerts an action on the myocardium, causing the contraction to be more forcible and by its action it improves coronary circulation.

In some cases with auricular fibrillation in which edema is marked, a much better diuresis is obtained by combining with the digitalis a diuretic drug, such as theocin. In another form of arrhythmia, namely, auricular flutter, digitalis usually produces a striking effect. Digitalis in these cases either throws the auricle into fibrillation and when digitalis is stopped the normal rhythm is restored, or the heart slows down directly into a normal rhythm with great improvement in the patient's condition. In pulsus alternans digitalis frequently produces good results. In the rapid, regular, decompensated heart digitalis slows the rate by increasing vagus inhibition and by increasing conduction time between auricle and ventricle, and it strengthens heart action by some direct action on the myocardium and coronary circulation. This type of case often seems definitely resistant to digitalis and the patient may take large amounts before any effect can be detected. It is always well to remember in such cases to watch the patient carefully, for sometimes the digitalis action, which has been long delayed, develops with great rapidity into marked activity so that the patient, who shortly before has shown no digitalis effect, quickly develops toxic symptoms.

In paroxysmal tachycardia there is little evidence that digitalis produces any good effect. In sinus arrhythmia and in compensated hearts with ectopic beats or extra systoles digitalis is not indicated. In cases of heart block not of digitalis origin, digitalis should be tried if the patient is decompensated. Results are sometimes good; at other times it would seem that the patient is made worse.

25. Relationship of Abnormal Heart Beat to Prognosis.—Of disturbances of the rhythm of the heart beat, White says, auricular fibrillation (absolute irregularity) and auricular flutter have the gravest prognosis, for not only are these conditions indices of myocardial damage, but they themselves increase the difficulty of the circulation by their rapid driving of the heart. Sometimes, however, many years may elapse before the death of these patients. Of eighty-six cases of auricular fibrillation seen at the Massachusetts General Hospital, 16 per cent. are known to have died within ten months of discovery. Premature beats and paroxysmal tachycardia are compatible with a long and active life, but their frequent association with cardiac damage should lead one to be a little cautious in prognosis. Permanent damage to the atrioventricular bundle of His or its branches is evidence of widespread damage to the myocardium. Hence the prognosis concerning a patient showing such a condition should be guarded. Defective contraction of the heart, as shown by familiar symptoms and signs, has a prognosis dependent on the number and degree of these symptoms and signs, plus a consideration of similar trouble in the past and of the way in which the heart responds to rest and digitalis. Of all the individual signs of abnormal contracting power of the heart pulsus alternans is one of the most important and consistent. Of eighty-three cases of alternation of the pulse seen at the Massachusetts General Hospital 31.3 per cent. are known to have died within ten months of discovery.

26. Treatment of Heart Disease.—Shattuck points out that the details of medicinal treatment of true angina depend somewhat on its origin—whether this be infectious or non-infectious, and if infectious whether of syphilitic or other origin. Medicinal treatment is usually of minor, though still of real importance. Strychnia is to be avoided as tending to heighten reflex excitability. Digitalis is indicated only so far as myocardial failure is suggested by symptoms other than pain. Small doses of potassium iodid can seldom be harmful, and seem to be of value even in nonsyphilitic cases. The action of glonoin is so transitory that its value between attacks is doubtful. If it be desirable, as Shattuck believes to be rarely the case, to try to secure constant reduction of blood pressure, sodium nitrite or erythrol may be used.

Indiana State Medical Association Journal, Fort Wayne

August, VIII, No. 8, pp. 367-412

27 *Treatment of Incipient Cataract with Subconjunctival Injections of Cyanid of Mercury. A. B. Knapp, Vincennes.
28 Indications for Cesarean Section. W. F. Howat, Hammond.
29 Extra-Uterine Pregnancy. E. Cox, Kokomo.
30 Why Surgery in Intestinal Stasis? A. P. Roope, Columbus.

27. Abstracted in THE JOURNAL, Oct. 31, 1914, p. 1603.

Journal of Biological Chemistry, Baltimore

August XXII, No. 1, pp. 1-239

31 *Assimilation of Cholesterol and Its Esters. J. H. Mueller, New York.
32 Rate of Passage of Fatty Acid of Food into Mammary Glands of Goat. O. C. Bowes, New York.
33 Influence of Ingestion of Fat. J. R. Murlin and G. Lusk, New York.
34 Mineral Excretion of Monkey. L. Baumann and E. Oviatt, Iowa City, Iowa.
35 Origin of Creatin. L. Baumann and J. Marker, Iowa City, Iowa.
36 Use of Aluminum Hydroxid Cream for Removal of Albumin in Nitrogen Partition in Urinary Analysis. G. Tracy and W. H. Welker, Chicago.
37 Formation of Specific Proteolytic Ferments in Response to Parenteral Introduction of Foreign Protein. A. E. Taylor and F. Hulton, Philadelphia.
38 Estimation of Nonprotein Nitrogen and Glucose in Finger Blood. A. E. Taylor and F. Hulton, Philadelphia.
39 Study of Protein Metabolism under Conditions of Repeated Hemorrhage. A. E. Taylor and H. B. Lewis, Philadelphia.
40 Predominance of Liver in Formation of Urea. A. E. Taylor and H. B. Lewis, Philadelphia.
41 Experimental Studies of Urinary and Blood Nitrogen Curves After Feeding. O. H. P. Pepper and J. H. Austin, Philadelphia.
42 Final Hydrogen Ion Concentrations of Cultures of Bacillus Coli. W. M. Clark, Washington, D. C.
43 Rôle of Oxidases in Respiration. G. B. Reed, Cambridge, Mass.
44 Studies of Autolysis. Acceleration of Liver Autolysis. H. C. Bradley, Madison, Wis.
45 Rôle of Halogens as Accelerators of Tissue Enzyme Action. M. Morse, Madison, Wis.
46 *Method for Determination of "Lecithin" in Small Amounts of Blood. W. R. Bloor, Boston.
47 Simple Method of Converting Duboscq Colorimeter into Nephelometer. W. R. Bloor, Boston.
48 Determination of Iodin in Presence of Organic Matter. R. B. Krauss, Philadelphia.
49 Presence of Iodin in Tuberculous Tissues and in Thyroid Gland. P. A. Lewis and R. B. Krauss, Philadelphia.
50 Question of Fat Absorption from Mammalian Stomach. L. B. Mendel and E. J. Baumann, New Haven, Conn.
51 Rate of Metabolism of Proteins and Amino-Acids. N. W. Janney, New York.
52 Quantitative Determination of Total Protein and Nonprotein Substances of Muscle. N. W. Janney and F. A. Csonka, New York.
53 Metabolic Relationship of Proteins to Glucose. Glucose Formation from Body Proteins. N. W. Janney and F. A. Csonka, New York.
54 Rôle of Digestive Glands in Excretion of Endogenous Uric Acid. L. B. Mendel and R. L. Stehle, New Haven, Conn.
55 Microrefractometric Method of Determining Percentages of Globulin and Albumin in Small Quantities of Blood Serum. T. B. Robertson, Berkeley, Calif.

31. Assimilation of Cholesterol.—Cholesterol, Mueller states, is readily absorbed from the intestinal tract through the

chyle and may be recognized in the contents of the thoracic duct. When cholesterol is fed entirely in the free condition, a portion is esterified during the absorption and appears so in the chyle, and vice versa. Hence either in the intestinal contents or in the wall of the intestine, processes of esterification or of hydrolysis may take place which result in the absorption of the cholesterol in approximately the same proportion of free to ester found normally in the chyle. This ratio seems not to be affected by the presence of small quantities of fatty acids in the food.

46. **Lecithin in Blood.**—The method used by Bloor consists in the extraction of the phosphatids from the blood or serum by treatment with warm alcohol ether and the determination of their amount by precipitation of the phosphoric acid after ashing, as the silver salt (or the silver ammonium salt). The phosphate is precipitated by silver nitrate in faintly alkaline solution in the presence of ammonium salts and the amount of precipitate is measured by the nephelometer.

Journal of Nervous and Mental Disease, Lancaster, Pa.

August, XLII, No. 8, pp. 529-592

56 Psychoses of Feebleminded. H. V. Wildman, Jr., New York.
57 Mental Disease and Language. W. McDonald, Jr., Providence, R. I.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

July, VII, Nos. 1-2, pp. 1-224

58 *Effect of Certain Drugs on Respiration and Gaseous Metabolism in Normal Human Subjects. H. L. Higgins and J. H. Means, Boston.
59 *Intrapericardial Medication and Massage in Treatment of Arrest of Heart. J. A. Gunn and P. A. Martin, England.
60 *Effect of Intravenous Injections of Sodium Phosphate. I. Greenwald, New York.
61 *Action of Veratrum Viride, with Remarks on Interrelationship of Medullary Centers. W. Cramer, Edinburgh.
62 *Action of Drugs on Isolated Gallbladder. C. C. Lieb and J. E. McWhorter, New York.
63 *Effects of Chelidonin on Smooth Muscle. P. J. Hanzlik, Vienna.
64 Comparative Action of Stereo-Isomers of Hydroxyhydrindamin. Y. Ikeda, Cambridge, Mass.
65 Antitoxin Action of Rattlesnake Serum on Rattlesnake Venom with Percentage of Total Solids of Serum and Bile. W. H. Welker and J. Marshall, Philadelphia.
66 Observations on Plasmapheresis. B. B. Turner, E. K. Marshall, Jr., and P. D. Lamson, Baltimore.
67 Toxicity of Certain Hirudin Preparations. E. K. Marshall, Jr., Baltimore.
68 Rôle of Liver in Acute Polycythemia; Mechanism for Regulation of Red Corpuscle Content of Blood. P. D. Lamson, Baltimore.

58. **Effect of Certain Drugs.**—The drugs selected by Higgins and Means are those ordinarily used as respiratory stimulants, including atropin, caffein, camphor and strychnin, and those as respiratory depressants, including morphin and heroin. The results obtained by the authors may be summarized as follows: They believe that any respiratory stimulation due to atropin is to be explained by (1) the increased "dead space," or dilatation of the bronchi, and (2) increased metabolism. The metabolism being increased, the respiratory volume increases to rid the body of CO_2 produced, and for a unit of CO_2 eliminated, the respiratory volume increases because of an increased "dead space." Caffein is a respiratory stimulant because of its effect on the respiratory center. It also seems occasionally to have a bronchodilator effect. It increases the gaseous metabolism and the respiration rate.

Camphor is by no means certain to stimulate the respiration, and when the respiration is stimulated, it is due to increased "dead space" (bronchodilatation) and not to increased sensitivity of the respiratory center. The total metabolism is sometimes increased by camphor injection, but hardly more than 10 per cent. The respiration rate is likely to show a small decrease after camphor; the nature of the respiration as shown by the pneumograph is unchanged. In general, strychnin did not affect the gaseous metabolism, the respiration rate and regularity, or the sensitivity of the respiratory center. Sometimes it appeared to cause bronchodilatation. In experiments with normal individuals, morphin and heroin in therapeutic doses acted as respiratory depressants, sometimes by acting directly on the center and sometimes by bronchoconstriction and in one instance by both. The total gaseous metabolism showed as a rule no change in oxygen consumption (or a slight diminution) and a marked drop in the carbon dioxid elimination; whether this is due to metabolic changes or to storage of CO_2 due to the respiratory depression is not clear. The respiration rate usually showed a small increase and the pulse rate a small decrease.

59. **Intrapericardial Medication and Massage.**—Two methods of starting an arrested heart were employed by Gunn and Martin: (1) by massage; (2) by drugs. They found that atropin, pilocarpin and epinephrin when injected into the pericardial sac in the rabbit can rapidly produce their characteristic effects on the heart up to a certain point. The immediate action obtained in this way is a local action on the heart and is not simply due to absorption of the drugs into the general circulation. In performing massage of the arrested heart with a view to reviving the spontaneous contractions, the following points are dwelt on by Gunn and Martin: Compression should be gradual and relaxation abrupt. The rate of compression should be, at most, less than half the normal heart rate. Massage should be regularly interrupted at short intervals for a few seconds to allow the spontaneous beats to develop. When the heart is arrested, massage, properly performed, acts both as an artificial circulation and as a mechanical stimulus to the heart muscle. Massage can be performed in the following ways, arranged in order of efficacy: (1) by direct compression of the heart through an opening in the thoracic wall; (2) by compression of the heart above the diaphragm through an opening in the abdominal wall; (3) by simple compression of the abdomen; (4) by simple compression of the thorax.

Direct thoracic massage combined with intrapericardial injection of epinephrin can revive the heart in practically any case of chloroform poisoning in the rabbit, even though the treatment be not begun until fifteen minutes or more after the heart has completely ceased to beat. In about 70 per cent. of cases recovery can be obtained, if treatment is commenced ten minutes after arrest of the heart, by the following procedure: artificial respiration through a tube in the trachea; intrapericardial injection of epinephrin; massage through an opening in the abdomen. If, when the heart has been started, the blood pressure continues low, and the heart beats remain (chiefly as a consequence of this) feeble, speedy and permanent improvement of the heart and blood pressure can be obtained by intravenous injection of either epinephrin or pituitary extract. Treatment on these lines is suggested for cardiac arrest in man, occurring either in chloroform poisoning or in other conditions in which general recovery might be anticipated to result from resuscitation of the heart.

60. **Intravenous Injections of Sodium Phosphate.**—Four solutions were used by Greenwald. These were fifth molar and fifteenth molar solutions of trisodium phosphate and also of a mixture of nine parts disodium and one part monosodium phosphate. The results were entirely negative. Large amounts of these solutions were injected intravenously into the animals without apparent ill effect. Excessively large doses were fatal but no tremor or convulsions were observed. The trisodium phosphate appeared to be slightly the more toxic but the effect seemed to be due to the probable interference with the respiratory exchange caused by the introduction of so much alkaline solution.

61. **Action of Veratrum Viride.**—From Cramer's experiments it appears that veratrum viride in small doses has a selective action on the afferent (pulmonary) nerve endings of the vagus. In cats it thus produces, reflexly, slowing or stoppage of respiration and a fall of blood pressure due to vasodilatation. As a rule there is, in addition, a marked slowing of the heart beat produced reflexly through vagus inhibition, but in cats this effect is sometimes absent. These effects of small doses are dependent on the integrity of the vagus nerves. The drug after having stimulated the afferent nerve endings of the vagus, paralyzes them so that a second or third dose is without effect. With larger doses the drug, in addition to the effects just mentioned, paralyzes the cardio-inhibitory nerve endings of the vagus and has also a direct action on the medullary centers leading to vasoconstriction

and to paralysis of respiration. These additional effects are not dependent on the integrity of the vagus nerves. Since large doses of the drug have so many diverse and partly antagonistic actions, the general result of a large dose of veratrum viride is very complex and irregular. The manner in which veratrum viride acts reflexly on the medullary centers leads to the conclusion that impulses arriving at the respiratory center can be communicated to the vasomotor center and to the cardicinhibitory center and that a central connection exists between these medullary centers. The question whether veratrum viride owes its action to veratria or to protoveratrin or to another alkaloid is discussed and left undecided. It is pointed out, however, that in the light of the present observations, the pharmacologic action of veratrin and protoveratrin requires reinvestigation. Veratrum viride is therapeutically valuable, as in suitable doses it affords a means of producing a lasting vasodilatation through acting reflexly on the vasomotor center.

62. **Action of Drugs on Isolated Gallbladder.**—According to Lieb and McWhorter morphin relieves the pain of biliary colic by acting on the central nervous system. Atropin and the nitrites would seem to be indicated in the treatment of gallstone colic. The use of epinephrin to produce relaxation of the gallbladder is not justifiable, inasmuch as a systemic action can be obtained only after intravenous injection.

63. **Effects of Chelidonin on Smooth Muscle.**—Hanzlik found that chelidonin promptly abolishes the spontaneous contractions of the following excised organs: Esophagus, fundus and pylorus of the frog's stomach, intestine of cat and rabbit, and pregnant uterus of guinea-pig. Chelidonin removes the effects of pilocarpin, pituitary extract, histamin and barium chlorid on surviving organs. The peripheral blood vessels of the frog previously contracted by epinephrin are more rapidly dilated by chelidonin than by Ringer's solution alone. There is also a definite dilator effect on the untreated vessels. The constriction of the bronchial musculature by histamin in the surviving lungs of the guinea-pig is removed by chelidonin. Bronchoconstriction does not occur with mixtures of histamin and chelidonin. Rabbits previously treated with large doses of chelidonin do not show bronchial spasm with the same doses of histamin as untreated rabbits. Chelidonin has no demonstrable effect on the pupil of the excised eye of the frog. In the living rabbit intravenous injection of chelidonin depresses intestinal peristalsis, and large doses remove the stimulant effects of pilocarpin. It appears that chelidonin exerts its main effects directly on smooth muscle. Therapeutically, chelidonin should prove beneficial in the treatment of such symptoms as asthma, colic and various other enteralgias and gastralgias, and in conditions in which morphin is not well tolerated.

Kentucky Medical Journal, Bowling Green

August 1, XIII, No. 9, pp. 355-404

69 **Sex: Its Relation to Woman's Life.** J. O. Jenkins, Newport.
70 Indications for Use of Obstetric Forceps. J. J. Molloy, Covington.
71 Gullible Doctor. T. J. Widrig, Newport.
72 Plea for Earlier, Less and Better Surgery. W. E. Senour, Bellevue.
73 Clinical Significance of Faucial and Pharyngeal Tonsil. W. J. Thomasson, Newport.
74 Tuberculosis in Infancy and Childhood. C. Youtsey, Newport.
75 Preventive Medicine: Regarding Children. C. E. Zimmerman, Newport.
76 Some Thyroid Facts. G. W. Hermann, Newport.
77 Pellagra. R. L. Bird, Covington.
78 Popular Errors and Superstitions in Medicine. W. W. Anderson, Newport.
79 Relaxation of Muscles in Treatment of Fractures. A. J. Graham, Chicago.
80 Vaccine Therapy. H. J. Farbach, Louisville.
81 Pseudo-Influenza vs. Influenza Vera. E. D. Burnett, Anchorage.

Maine Medical Association Journal, Portland

August, VI, No. 1, pp. 1-64

82 Internal Secretions. W. S. Bainbridge, New York.

Medical Record, New York

August 28, LXXXVIII, No. 9, pp. 341-382

83 Cooperation in Treatment of Nervous Maladies. J. M. Taylor, Philadelphia.
84 *Rational Method of Treating Lobar Pneumonia. E. E. Cornwall, Brooklyn.
85 Responsibility of State in Tuberculosis Movement. E. O. Otis, Boston.
86 Analysis of Claustrophobia. C. P. Oberndorf, New York.
87 Fallacy of Eugenics. A. L. Sweet, Geneva.
88 Chronic Appendicitis—Its Relation to Cardiospasm and Other Neurospasm. T. A. Kenefick, New York.
89 Chemical and Pathologic Observations in Case of Mercury Poisoning. M. Kahn, V. L. Andrews and J. H. Anderson, Pittsburgh.
90 Cesarean Section. C. F. Kivlin, Troy.

84. **Rational Method of Treating Lobar Pneumonia.**—Cornwall employed his treatment in 133 consecutive cases with fourteen (10.5 per cent.) deaths. A particular, specified diet is given, which is modified in definite ways to meet special indications. This diet is limited in quantities of protein and fuel to somewhat less than the minimum health rations, it is fluid, it is easy of digestion, it supplies salts needed by the body, and it is nonputrefactive. Evacuations of the bowels are not artificially induced, as a rule, although in exceptional cases laxatives of a mild character are given. Agents to stimulate the heart are given according to a definite plan. The treatment of symptoms is exceedingly conservative. The diet is given according to three regular prescriptions. The first prescription is for the active period of the disease, and the second and third for the convalescent period. During the febrile period and for two or three days after defervescence, 7.5 ounces of a 2:1 mixture of milk and barley water to which has been added 5 grains of sodium chlorid are given seven times daily, and 10 grains of calcium chlorid dissolved in 5 ounces of water, are given four times daily. On the third day substitute 6 ounces of moist cooked cereal and 3 ounces of milk, an equal quantity of boiled rice and milk, and two slices of milk toast, for three of the milk and barley water feedings, respectively, with omission of the calcium chlorid. On the sixth day, after defervescence in uncomplicated cases a more liberal diet is given.

In young or middle-aged adults with originally healthy hearts stimulation is usually delayed until signs of heart strain appear, which is usually not later than the fourth day. The first stimulant given is strychnin sulphate, in doses of $\frac{1}{60}$ of a grain three times a day or every four hours. If the pulse becomes unduly rapid or the right ventricle shows signs of dilatation, tincture of strophanthus is also given, in doses of 1½ minims every four hours. If the signs of cardiac strain become pronounced, the dose of strophanthus is increased to 2½ minims and the dose of strychnin to $\frac{1}{30}$ of a grain, and perhaps citrate of caffein in 2-grain doses every four hours is added. More than this amount of stimulation is seldom required in patients treated according to this method, but if it should seem to be required, digitalin in doses of $\frac{1}{100}$ to $\frac{1}{50}$ of a grain is given hypodermically every four hours, and perhaps spirits of ammonia in doses of ½ a dram every one or two hours is added. When more stimulation than that afforded by the strychnin, strophanthus and caffein is required the prognosis is usually bad. In the small proportion of cases which show a gastric or intestinal idiosyncrasy with respect to strophanthus, that drug should be omitted and caffein substituted as the second stimulant. In the aged, in alcoholics, and in patients with preexisting heart disease stimulation is usually required from the beginning. In the aged and in alcoholics whisky or brandy is usually given in small doses throughout the disease. In infants and young children heart stimulants are almost never given, even though the pulse may be very rapid.

Pain, cough, restlessness, or insomnia are relieved by the application of hot poultices to the chest and perhaps by the administration of morphin or codein in small doses but only in the early stages of the disease. Diarrhea is treated by restriction of the diet to barley water. Vomiting is treated by stopping all food for a while, and perhaps, if in an early stage of the disease, by small doses of morphin. Tympanites, which is said to be of rare occurrence in cases treated according to this method, calls for reduction of the diet to barley water and orange juice alone, to barley water alone, or to water alone, and if it is severe, it may call for a simple enema or one of soapsuds or fel bovis and perhaps the introduction of the rectal tube.

New Jersey Medical Society Journal, Orange

August, XII, No. 8, pp. 365-416

91 Mental Hygiene in General Practice. W. G. Schauffler, Lakewood.
92 Needs of Insane in New Jersey. E. M. Fisher, Morris Plains.
93 Treatment of Empyema. E. Marvel, Atlantic City.
94 Cellular Factor in Arteriosclerosis. L. F. Bishop, New York.
95 Pathology of Cystic Tumors of Ovary. A. Rothseid, New York.
96 Early Cystic Degeneration of Ovary. V. Parsonnet, Newark.
97 Vision of Children. S. E. Pendexter, East Orange.
98 Tuberculosis in Childhood. B. S. Pollak, Secaucus.
99 Experience with Emetin. T. R. Chambers, Jersey City.

New Mexico Medical Journal, Las Cruces

August, XIV, No. 5, pp. 129-160

100 Some Studies in Character of Percussion Note. E. A. Duncan, Silver City.
101 Acute Osteomyelitis. W. T. Joyner, Roswell.
102 Blood Pressure. I. D. Locwy, Silver City.

New Orleans Medical and Surgical Journal

August, LXVIII, No. 2, pp. 77-144

103 History of Cataract Extractions. T. J. Dimitry, New Orleans.
104 Some Experiences with Von Ruck's Watery Extract of Tubercle Bacilli and Vaccine for Tuberculosis. B. F. Terry, Houston, Texas.
105 Some Stomach (?) Cases. J. T. Halsey, New Orleans.
106 *Medical Career. I. Dyer, New Orleans.
107 Use of Chloretone in Case of Extensive Burns of Child 12 Years Old. W. P. Bradburn, New Orleans.
108 Drainage of Abdominal Cavity. A. Jacoby, New Orleans.
109 Case of Purpura Hemorrhagica, with Accidental Complication Following Subcutaneous Use of Horse Serum. R. Lyons, New Orleans.
110 Subacute and Chronic Osteomyelitis. J. F. Occhsner, New Orleans.

106. Abstracted in THE JOURNAL, March 20, p. 1025.

Ohio State Medical Journal, Columbus

August XI, No. 8, pp. 481-548

111 Operative Treatment of Fractures. C. L. Scudder, Boston.
112 Some Practical Points in Obstetrics. J. F. Baldwin, Columbus.
113 Cutaneous Eruptions of Pellagra. A. Ravogli, Cincinnati.
114 Typhoid in Ohio. F. G. Boudreau, Columbus.
115 Arteriosclerosis. W. W. Beauchamp, Lima.
116 Disinfection of Water. W. H. Dittoe, Columbus.

Old Dominion Journal of Medicine and Surgery, Richmond, Va.

August, XXI, No. 2, pp. 53-91

117 Mild Cases of Manic-Depressive Psychosis; Cyclothymia. B. R. Tucker, Richmond.
118 Tuberculosis; Disease of Childhood. T. Frazier, Asheville, N. C.
119 Early Recognition and Rational Treatment of Pulmonary Tuberculosis. W. K. McCoy, Gum Spring.
120 Acute Glossitis. B. E. Summers, Richmond.
121 Vicarious Menstruation. A. A. Marstellq, Richmond.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

August 14, II, No. 2850, pp. 245-280

1 *Immediate Effects of Inhalation of Chlorin Gas. E. Schäfer.
2 *Treatment of Gas Poisoning in Transvaal Mines. A. H. Watt and L. G. Irvine.
3 Some Results of German Gas Poisoning. W. Broadbent.
4 *Isolation of Typhoid and Paratyphoid Bacilli from Feces. C. H. Browning and L. H. D. Thornton.
5 Historical Note on Farr's Theory of Epidemic. J. Brownlee.
6 Tubo-Ovarian Abscess, Intestinal Obstruction, and Ureteric Obstruction: Six Abdominal Sections: Recovery. J. D. Malcolm.
7 Inversion of Uterus in Nullipara due to Submucous Fibromyoma. R. B. Johnston.
8 Acute Septic Meningitis due to B. Coli Following Skull Wound. C. E. H. Milner.
9 Congenital Hereditary Absence of Some of Digital Phalanges. D. S. Clarke.

1. **Effects of Inhalation of Chlorin Gas.**—From experiments Schäfer concludes that chlorin produces its fatal results by causing obstruction of the pulmonary vessels, amounting in some cases to complete stasis, and not by causing contraction of the bronchioles. Confirmation of this conclusion is obtained as the result of microscopic examination of the lungs of "gassed" animals. The pulmonary capillaries are gorged with blood, and there is an extraordinary amount of edema in the interstitial tissue of the lung. Presumably the edema is secondary to the vascular obstruction, but even if this is so it must set up a vicious circle by increasing the obstruction, and this again will increase the edema; so that in cases of survival the edematous condition must tend to increase, at any rate for some time. Apart from the extreme congestion of the vessels and the edema, the tissues of the "gassed" lung are normal; the epithelial cells of the bronchial tubes are well preserved, and there is usually little increase of mucus within them. That secretion of mucus does not play an important part in connection with the fatal inhalation of chlorin is evident from the fact that death results just as inevitably and rapidly after a prior dose of atropin as without it. So far as the other organs are concerned, the heart retains its excitability for some time after death, although its contractions are weak. The right side, especially the auricle, is fuller than the left, but not engorged with blood as in ordinary asphyxia. The liver and abdominal organs have a normal appearance; they are not specially congested; the intestines are usually bloodless, although the veins at the back of the abdomen are full of blood. Bromin vapor, although much more irritating to the conjunctival mucous membrane, is less deleterious to the respiratory organs than chlorin, the fulminating effect of which appears to be absent in the case of bromin.

2. **Treatment of Gas Poisoning.**—Cases of poisoning by nitrous fumes are not uncommon in the mines of the Witwatersrand, and from published descriptions of "gassing" in the trenches the symptoms appear to be very similar. The treatment employed is described by Watt and Irvine as follows: Every man who has been exposed to nitrous fumes must be kept under observation, in the hospital if possible, for at least twenty-four hours. An emetic of copper sulphate, 8 grains, followed by a large quantity of water, is given, or a hypodermic injection of apomorphin. It is imperative that vomiting should be freely induced. If an emetic is given early, any other treatment except rest in bed for a day is not usually required. The onset of dyspnea and cyanosis is watched, and should moist sounds develop at the bases of the lungs bloodletting is employed, and as much as a pint may be withdrawn from a vein in the arm. This is usually difficult, as the blood is tarry and coagulates very rapidly. The authors have transfused with saline to replace some of the blood withdrawn. Atropin may be given hypodermically. Inhalation of oxygen is also useful. Should symptoms of general edema of the lungs develop, the prognosis is extremely grave. Very few recover when this stage has been reached.

4. **Isolation of Typhoid Bacilli from Feces.**—The method of Browning and Thornton is carried out as follows: Specimens of feces should be cultured within several hours after evacuation. In cases in which feces are normally solid, it is advisable to give purgatives and examine the resulting fluid motions. Make the usual smear cultures on plates of solid medium containing an indicator—for example, Endo or MacConkey's. At the same time inoculate peptone water containing brilliant green; employ preferably a series of tubes for each specimen, but when time prevents this, use a concentration of 0.5 c.c. of 1:10,000 brilliant green in 10 c.c. of medium. The direct plates and the brilliant green peptone water cultures are then incubated; if typical colonies are not found on the direct plates, or if "likely" colonies are scanty, make subcultures (successive strokes) from the green tubes on Endo or MacConkey's medium. These are then incubated for twenty-four hours and examined in the usual way; should typhoid or paratyphoid bacilli be present in the subcultures from brilliant green medium they usually occur as an abundant growth of typical colonies, and it is possible to proceed at once to identify them by the usual fermentation and serum reactions. In certain cases (in which green-resisting organisms are present) positive results may be obtained only when telluric acid is employed, in addition to the green, in the medium. The cultures in the green telluric acid mixture may be made simultaneously with the others, or this medium may be reserved until the other procedures have failed. Thus, should direct plates fail to yield positive results, and the green medium be overgrown (inosite fermenters), then, in further examinations of the case, employ, in addition, peptone

water medium containing a mixture of brilliant green with telluric acid.

Lancet, London

August 7, 11, No. 4797, pp. 267-318

10 *Experiences in Vaccine Treatment. F. C. Madden.
11 *Malignant Aortitis; Hypoplasia of Aorta; Report of Case. H. D. Rolleston.
12 Case of Placenta Praevia with Threatened Puerperal Eclampsia, Treated by Cesarean Section. J. B. Hellier.
13 Mechanical Treatment of Compound and Septic Fractures. R. McQueen.
14 *Direct Hemolysis; Test for Bacterial Toxins and for Estimation of Dosage in Vaccine Therapy. H. L. Smith and A. C. Brown.
15 *Relation of Ventricular Fibrillation to Clinical Chloroform Syncope. E. H. Embley.

August 14, No. 4798, pp. 319-370

16 Investigation of Causes which Determine Life of Fetus in Utero. W. S. A. Griffith.
17 *Treatment of Wounded by Vaccines. H. L. Tidy.
18 *Hemoptysis Due to High Tension; Report of Cases. F. de H. Hall.
19 *Treatment of Cystitis by Intravesical Injections of Lactic Bacillus Cultures. D. Newman.
20 School Medical Inspection and British Army. G. Finch and C. W. Hutt.
21 Transient Renal Congestion; Report of Cases. C. W. J. Brasher.
22 Case for Symptomatic Treatment in General and for Antipyretic in Particular, with Special Reference to Cryogenine. H. Sainsbury.

10. Experiences in Vaccine Treatment.—An autogenous vaccine is preferred by Madden, as in its preparation the true causal organism, or group of organisms, is isolated and grown, and a more potent and direct vaccine made available. The strength of the vaccine used by him is generally 250 million to 1 c.c., and a start is made with 50 million. The intervals between the doses depend on the case itself and the reaction produced, but they are never less than five days. He has employed vaccines systematically in the treatment of boils and furunculosis generally. So universally successful has this method been in his hands that he never employs any other. A start is made with 100 million followed by 500 million five days later, and at a similar interval by 1,000 million. Generally this series of three injections suffices to cure in the ordinary case; but in more intractable cases a further series working rapidly up to 5,000 million, will almost certainly be sufficient.

He has also had some success in cases of pyorrhea alveolaris with an autogenous vaccine, but he advises that vigorous local treatment must be carried out at the same time. In acne the results have been on the whole very disappointing. Comparatively recent and uncomplicated pustular acne does, however, very promptly react in almost the same degree as an inveterate furunculosis; but in old cases, in which there is much scarring about the sebaceous follicles, results are likely to be disappointing. A further very important use of vaccines, Madden says, is in boils, carbuncles and cellulitis occurring in diabetes. Here particularly one must make a practice of giving large and repeated doses of vaccines, alternating in extreme cases with antistreptococcic serums. Septic infection from operation wound or injury may also be controlled by vaccines; but it is very necessary to make sure of the causal organism before beginning a series of injections.

Madden points out that in all vaccine treatment it must be remembered that an incision into the affected part acts like a vaccine, as it produces a phagocytosis which will itself have a vaccinal effect, quite apart from the evacuation of pus and septic serum and the relief of tension by the incision. Care must therefore be taken not to give a strong dose of a vaccine at the same time as the incision or too violent a reaction may occur. Further, vaccine must not be given during the stage of depression or of anaphylaxis resulting from the vaccinal effect of the incision. In closing, Madden refers to his experience with those "shotgun" bacterial preparations sold under the name of "Phylacogens": "I have used all the phylacogens, but have never seen any benefit from them except in rheumatism, and then only after a long series of rapidly increasing injections."

11. Malignant Aortitis.—The morbid lesion present in Rolleston's case, which appeared to be analogous to malignant or subacute bacterial endocarditis, being situated in the arch of the aorta instead of on the endocardium, was not proved to be infective, as the only blood culture made was negative and no bacteria were seen in a smear from the pus found just outside the aortic lesion. Although the blood culture was made when, as shown by the temperature chart, the disease was active, Rolleston did not regard it justifiable to explain the failure to obtain a positive result by the hypothesis that this was an analogous bacteria-free period in a case of infective aortitis.

14. Direct Hemolysis.—When blood corpuscles, washed free from fibrin and serum, are brought into contact with emulsions of bacteria with which the blood has been previously sensitized, as a result of acute or chronic infection, hemolysis occurs. The evidence in support of this statement was obtained by Smith and Brown from a series of experiments begun in November, 1914. Of 180 cases which have been investigated in this way, a large proportion have been of chronic arthritic types. The remainder has been made up from various catarrhal conditions, nerve affections, cutaneous and glandular lesions, and a few cases of acute pulmonary affections. The technic employed is described in detail and clinical notes of cases treated by inoculations suggested by direct hemolysis are given.

15. Ventricular Fibrillation and Chloroform Syncope.—Embley has noted the occurrence of ventricular fibrillation during the administration of chloroform to three out of five cats in succession, while out of several hundred dogs, in which, in succession, death has been caused designedly by chloroform under a great variety of conditions, he has never observed it except as a terminal process when the blood pressure has fallen very low from shock or some other cause, quite a distinct event from that form of fatal syncope in cats. His experiments with cats in chloroform narcosis indicate that fully established ventricular fibrillation is fatal. Neither rhythmic heart massage nor any other measure has any effect on it. After short periods of imperfect fibrillation recovery is spontaneous.

17. Treatment of Wounded by Vaccines.—Tidy's article is based on experience of the treatment of wounded at the British Red Cross Hospital, Netley. He says that vaccine treatment is unnecessary in mild cases. Given by suitable methods, a vaccine is not contraindicated by any degree of severity or acuteness. Whenever possible an autogenous vaccine should be given. The more acute the condition is the more important it becomes that an autogenous vaccine should be employed; but while this is being prepared a stock vaccine should be used. With streptococci, commence with 1 to 2 millions, not exceeding 2 millions. With *Bacillus coli*, an initial dose of 30 millions can be used. Of coliform bacilli of the types which appear most powerful, forming little acid and gas in carbohydrate mediums, the initial dose should be 2 to 5 millions. At the other end of the series will be bacilli more closely related to the typical *Bacillus coli*. Of such strains probably larger initial doses may be given, but as a general rule, it is inadvisable to inject as a first dose more than 5 millions of any bacillus which grows on McConkey's medium with yellow colonies. Of *Staphylococcus aureus*, an initial dose of 30 millions may be given. As a rule five days should be allowed between successive doses. When a dose is progressing satisfactorily each successive dose should be 50 per cent. larger than the previous one.

If the temperature has obviously risen as the result of the previous injection, give a dose of half the amount. After the injection the evening temperature may be 103. If such a rise occurs after the first injection the same dose should be repeated. If on a third visit it is found that the temperature as a general average has remained the same, then an increase in dose should be made. This should be 25 per cent. Subsequently the temperature, though gradually subsiding, may remain irregular. The dose should be carefully increased by 25 to 50 per cent. each time. If after any injection the temperature has definitely risen the dose should be reduced to the amount of the last but one, or, if the rise is marked, to half of the last dose. Acute septicemia is not a contraindication to the administration of vaccines.

Almost invariably a streptococcus is the causal organism. Time is so important that a stock vaccine should always be given while an autogenous one is being prepared. The injections should be repeated every two or three days. The initial dose should not exceed 2 million streptococci.

Of mixed vaccines the initial dose of each bacterium need not be smaller than the amounts given above. In subsequent doses the bacteria considered to be most important should be increased more rapidly than the other or others, by increases of 50 per cent., while the others are increased by 33 per cent. A vaccine should not be given within thirty-six hours previous to any operation on a patient with a septic wound. Even a small counter-incision through healthy tissues is followed frequently by an immediate and marked rise of temperature and much discharge. During a course of vaccines such an operation should be considered to take the place of an injection, the next dose being given five days later. This does not apply to the commencement of injections in acute streptococcal cases of a septicemic type.

18. **Hemoptysis Due to High Tension.**—Five cases are cited by Hall to drive home the conclusion that in certain cases of hemoptysis the cause is to be sought in the condition of the vascular system rather than in pulmonary tuberculosis. In the hemoptysis due to high tension, he advises inhalation of nitrite of amyl at the time of the hemorrhage, with low diet and not too much liquid. When the bleeding has been arrested, then attempts should be made to regulate the patient's mode of life so as to reduce the high blood pressure. The prohibition of alcohol, the limitation of meat and salt, and a generally restricted diet are indicated. If the patient be engaged in business his hours of work should be abridged, and if the case be a serious one it may be necessary to advise that all work be discontinued for a time or even permanently. The skin should be kept active by means of warm baths, and a daily action of the bowels, a rather loose motion being aimed at, should be secured. Drugs such as iodid of potassium and lithium hippurate should be given, and an occasional dose of calomel or blue pill is most useful in lowering tension. By these means further hemoptysis may be prevented and the patient's life prolonged, but, should apoplectic symptoms threaten, prompt venesection should be carried out.

19. **Cystitis Treated by Lactic Bacillus Cultures.**—When the symptoms point to a subacute cystitis with decomposition of urea prior to evacuation, Newman says, intermittent catheterization and irrigation, followed by instillations of pure lactic bacillus cultures, may soon effect a cure. The treatment, however, must be carried out regularly, because, if interrupted before the bladder is thoroughly cleansed, the pyogenic bacilli have an opportunity of reasserting themselves. The bladder must be distended as fully as possible, short of producing pain, and evacuated from four to six times at each sitting by means of a syphon arrangement; syringes are of no use. In "incrusted cystitis" the most conspicuous benefit is obtained from lactic bacillus treatment.

Archives des Maladies du Cœur, Etc., Paris

August, VIII, No. 8, pp. 237-280

23 Treatment of Angina Pectoris. (Angine de poitrine.) F. Soca.
24 Sodium Citrate Test for Coagulating Power of the Blood. (Bases expérimentales d'un nouveau procédé pour mesurer la coagulabilité sanguine. Analyse de l'action anticoagulante du citrate de soude. Rôle du calcium sanguin dans le maintien de la fluidité du sang et dans la coagulation.) M. Bloch.

Bulletin de l'Académie de Médecine, Paris

July 27, LXXIV, No. 30, pp. 95-120

25 *Acute Meningitis among the Troops at the Front. Sacquépée and others.
26 Reeducation of the Maimed in War. (Rééducation chez les blessés de la guerre et le rôle de la suppléance.) P. Kouindjy and A. Rodiet.
27 Sterilization of Vaccination Lancets. L. Camus.
28 *Nine Months of Surgery in the Field. H. Reynès.
29 Utilization of Camp Kitchens for Steam Sterilization and Shower Baths. Chauchard.

August 3, No. 31, pp. 121-138

30 Typhoid and Paratyphoid Flora of Cerebrospinal Fluid. G. Dauméron.
31 The Oscillometer in Estimation of Obliteration of Artery. L. Rénon.
32 Roentgen Ray Localization of Projectile during its Removal. (Méthode d'extraction des projectiles basée sur le contrôle radioscopique de leur situation exacte pendant tous les temps de l'acte opératoire.) Bouchacourt.
33 Devices to Correct Radial and Sciatic Paralysis. Sollier.

25. **War Meningitis.**—In examining the cerebrospinal fluid from 121 cases of suppurative meningitis, the meningococcus was found only in about 50 per cent.; in times of peace the proportion is between 80 and 90 per cent. Carriers were found less frequent than in times of peace. A number of cases at one time in one troop were due to the meningococcus. Later, a group developed due to the pneumococcus, and still later a streptococcus group. Sacquépée thinks that the nervous strain and air concussions in trench life render the meninges more susceptible to injury of any kind.

28. **Nine Months of Surgery at Verdun.**—Reynès says that the inevitable gravity of the wounds keeps increasing on account of the firing of hand grenades, etc. This close firing causes such a number of injuries and general shock that the prognosis is very grave. He is with a field hospital at Verdun.

Presse Médicale, Paris

August 5, XXIII, No. 36, pp. 289-296

34 *Icterus from Absorption of Picric Acid, and its Differentiation. M. Wahl.
35 Technic for Sterilization of Drinking Water with Iodin or Hypochlorites. A. Gascard and G. Laroche.
36 The So-called New Antiseptic: Chlorinated Lime plus Sodium Carbonate. H. D. Dakin.

34. **Jaundice from Absorption of Picric Acid.**—Wahl has found that picric acid in the urine reacts to various tests exactly like bile pigments. This might be a source of error under certain conditions. The symptoms induced by absorption of picric acid also are very similar to those of catarrhal jaundice. He has been experimenting on monkeys, giving them a subcutaneous injection of picric acid. It was eliminated within a short period but not all could be refound, part of it evidently being eliminated in some other form.

Correspondens-Blatt für Schweizer Aerzte, Basel

August 7, XLV, No. 32, pp. 993-1024

37 *Diagnosis of Incipient Pulmonary Tuberculosis. (Zur Frühdiagnose der Lungentuberkulose mit Ausschluss der Röntgendiagnose.) O. Amrein.
38 Importance of Iodin in Wounds to Ward Off Tetanus. A. Häberlin.

37. **Early Diagnosis of Pulmonary Tuberculosis.**—Amrein discusses in turn each of the principal points in making an early diagnosis of tuberculosis of the lungs, especially the history of the case and inherited taints; the behavior of the temperature, particularly in the rectum after exercise; the changes from normal found on physical examination, noting with special care any tendency to muscular spasm; spinalgia; low position and reduction in size of area of apical resonance; reduction of resonance to actual dulness; rough, impure, weaker, accentuated, staccato respiration; prolonged expiration; weaker inspiration; slight crackling to distinct crepitation and rhonchi; louder whispering voice, and lagging of one lung behind the other in the excursions of the chest. He regards a rough and a staccato type of breathing as pathognomonic of a tuberculous process in the lung, particularly in the apex, and declares that the former, especially, is one of the very first auscultation findings in incipient pulmonary tuberculosis. In analyzing the history of the case, note any readiness to fatigue, irritability, anemia, especially in girls, distaste for eating, especially for breakfast, exaggerated heart action on climbing stairs, panting in climbing or walking faster, or talking while walking, sweaty hands, loss of weight and unhealthy aspect—any of these are suggestive of tuberculosis although they may occur with other affections.

A tendency to slight hoarseness is also significant, or rather fatigue of the voice, the voice partly giving out on loud speaking and requiring frequent clearing of the throat to go on. This change in the voice is a very early symptom and may be explained by reflex irritation of the vagus fibers in the lung or by compression of the recurrent nerve by enlarged glands, or it may be the consequence of actual

damage of the speech apparatus and irritation of the upper air passages from the pharynx down to the larynx. More or less shortness of breath after climbing, singing or talking has the same significance. Coughing may be induced in the same way by irritation of the sensory fibers of the vagus or by compression from glands. It generally commences as a dry hacking and hawking, especially in the morning and also at evening and in warm rooms, after talking and walking. The vasomotor system may be unstable from toxic influences, the color fluctuating, ready blushing yielding to pallor, the checks keeping red, the blood pressure low. Loss of appetite and a sense of oppression in the stomach and sluggishness of the bowels are also common in incipient tuberculosis. The lagging of one lung behind the other is seen best by standing behind the seated patient and looking down from above on the front of the chest. The slightest difference in the convex outlines of the infraclavicular regions is readily recognized by this means. Turban declares that this lagging behind of the diseased apex is the more distinct the more incipient the tuberculous process.

Deutsche medizinische Wochenschrift, Berlin

July 29, XLI, No. 31, pp. 905-936

39 Estimation of the Heart Disturbances among the Troops at the Front. (Zur Würdigung der Herzstörungen der Kriegsteilnehmer.) P. Fürbringer.
40 *Necropsy Findings May Explain Otherwise the Deaths Ascribed to Salvarsan. (Todesfälle nach Salvarsan.) B. Fischer. To be continued.
41 *Radiotherapy of Hypophysis Tumors. L. Küpferle and A. v. Szily.
42 Intra-Uterine Transmission of Paratyphoid. P. Schmidt.
43 Typhoid and Protective Vaccination. W. Kuhl.
44 Antibody Titer in the Serum as Guide to Treatment of Diphtheria. (Antitoxinbestimmung bei Diphtherickranken vor und nach Heilseruminjektionen.) H. Opitz.
45 *The Coagulation Reaction in Syphilis. (Gerinnungsreaktion bei Lues.) M. Brandt.
46 *Correction of Saddle Nose. (Sattelnasenkorrekturen.) E. Eitner.
47 Improved Technic for Sterilizing the Hands. J. Schumacher.
48 Extension Screw for Plaster Cast. (Schraubenstreckverband.) H. Töpfer.
49 *Albumin "Drawn from the Air." (Eiweiss aus Luft. Bedeutung der Herstellung der sogen. Mineralhefe.) H. Boruttau.

40. **Necropsy Findings Exonerate Salvarsan.**—Fischer relates that in the course of six thousand necropsies, since 1910, he has encountered a number of cases in which the death had been apparently the direct consequence of the salvarsan the individual had been taking. He gives the details of three cases in this part of his article. In one all the circumstances seemed to incriminate the salvarsan, but necropsy revealed tuberculosis just becoming generalized, both suprarenals being destroyed. In a second case, progressive fatal anemia followed the salvarsan, but signs of recent abortion and hemorrhage pointed to another factor in the anemia. In the third case, unsuspected pneumonia explained to some extent the febrile response to the salvarsan in a hard drinker.

41. **Radiotherapy of Hypophysis Tumor.**—Küpferle and von Szily report the case of a well-to-do man of 65 who had a cancer in the hypophysis partially removed by way of the orbit. A few months later vision was lost in consequence of the recurring growth of the cancer; but under intensive crossfire Roentgen exposures, vision gradually improved until it was 6/24 in one eye and with the other eye the patient could count fingers at half a yard. The eyesight has kept at this point for seven months to date. Béclère has reported four similar cases of improvement of symptoms of pressure from a hypophysis tumor under Roentgen exposures, and Gunsett has also published a case. In none in this last group had operative treatment been applied, and the exposures were less intensive than in Küpferle and von Szily's case. They supplemented the Roentgen exposures with mesothorium in the pharynx.

45. **Coagulation Reaction in Syphilis.**—Brandt has applied, in 500 cases, the technic published by Hirschfeld and Klinger (summarized in THE JOURNAL, 1914, LXIII, pp. 1060 and 1241). He paralleled it with the Wassermann test and with the deviation of complement test, and found a remarkable concordance between the findings with them. When there was divergence, the clinical history generally sustained the coagulation test. For this, 0.1 c.c. of the serum to be examined is added to 0.1 c.c. of the diluted emulsion of extract of guinea-pig heart. After this has been set aside at room temperature for one hour, 1 c.c. of a solution of salt with a little calcium chlorid is added and 0.5 c.c. of diluted sheep serozyme. Syphilitic serum inhibits the action of the cytozyme in the organ extract and no thrombin is formed, as this requires for its production both the serozyme in the plasma and the cytozyme from the cells. (The test is generally called the coaguloreaction. It is based on the inhibition of coagulation in oxalated beef blood plasma when syphilitic serum has been added to the organ extract previously diluted with rabbit or other serum and a 1 per cent. solution of calcium in physiologic salt solution. The thrombin itself is assumed to be the product of the interaction of a serozyme (an albuminoid), a cytozyme (a lipoid), and a calcium ion.)

46. **Correction of Saddle-Nose.**—Eitner makes a wax or plaster cast of the saddle-nose, and then models an ivory support for it. He has been much gratified with the ease and simplicity of this method of building up a new nose as he has applied it in eighty-six cases; only twelve were of syphilitic origin. This last group was the most difficult to correct, and satisfactory results were obtained at once only in three cases; six required one or two supplementary operations and three are still under treatment. The success depends on the mechanical factors. The ivory support can be hollowed out and perforated at various points to make it as light as possible. The surface is left rough and uneven to aid its growing into place.

49. **Yeast as Food.**—Boruttau discusses the yeast food, *Nährhefe*, which is made from brewers' yeast, dried. About 40 per cent. of its dried substance is pure albumin, while it can be grown on sugar, ammonia and other inorganic salts. In this way a large amount of albumin is produced from the sugar soil and the nitrogen of the ammonia. He calls it "drawing albumin from the air," in much the same way as Frank, Caro and Haber have succeeded in making sulphuric acid and ammonia on a large scale from the nitrogen of the air. Yeast grows so rapidly with the proper soil and temperature that with it, he says, we can produce as much albumin in a few hours, independent of fields and weather, as otherwise would require months for sowing, cultivating and harvesting. Out of 100 parts by weight of sugar and 52 of mineral substance, at least 270 parts by weight of compressed yeast can be produced with 80 of dry substances. Tests of this yeast food are now under way; the results of some were given recently in these columns, August 21, page 747.

Münchener medizinische Wochenschrift, Munich

July 27, LXII, No. 30 pp. 1005-1036

50 The Germ Content of Cholera and Typhoid Vaccines. (Keimgehalt von Cholera- und Typhusimpfstoffen.) v. Rembold.
51 *Influence of Killed Yeast on the Digestive Ferments. (Einfluss der abgetöteten Hefe auf die Verdauungsfermente.) M. Winckel.
52 *Splenectomy in Kala-Azar. D. Kokoris.
53 *Durable Traces of Roentgen Exposures. F. Janus.
54 *The Chromogen Test in the Urine. (Zur Urochromogenprobe im Harne.) E. Pulay.
55 Albuminometer. (Ein einfacher Apparat zur quantitativen Bestimmung von Eiweiss, selbst in kleinsten Mengen.) R. Weiss.
56 Relapsing Fever as Cause of Dropsy in Russian Prisoners. (Zur Aetiologie der Oedemkrankheiten in russischen Gefangenenlagern.) T. Rumpel.
57 Gas Gangrene from Anaerobic Streptococci. (Gasbrand.) Marwedel and Wehrsig.
58 Gas Phlegmons. Fessler.
59 Injuries of Peripheral Nerves. L. Mann.
60 Treatment of Neuroses Following Grenade Explosions. A. Bittorf.
61 *Return of Tetanus after Three Months. (Zur Lehre vom Wundstarrkrampf.) Happel.

51. **Yeast in Therapeutics.**—Winckel relates that the results of his analysis and experiments with ferments have demonstrated that the therapeutic efficacy of yeast has nothing to do with its fermenting properties. They can be annulled by brief heating without impairing its other properties. These seem to inhere in the nuclein substance of the killed yeast cell.

52. **Splenectomy in Kala-Azar.**—Kokoris has removed the spleen in treatment of this disease in three children, but

only one child threw off the disease completely afterward. He says that kala-azar is endemic on some of the isles of Greece where it has been long described under various names. Cases are encountered occasionally in Greece proper although they are usually mistaken for malaria. Recovery may occur spontaneously in kala-azar; Lignos reported three spontaneous cures in nineteen cases on the island of Hydra. Splenectomy, however, does away with the main focus of the disease, and when this is gone the organism may be able to cope with those that remain. The chances are better the earlier the disease is recognized.

53. **Warm Bath Brings Out Traces of Former Roentgen Exposures.**—Janus while taking a warm full bath noticed that a circumscribed redness appeared on his abdomen over areas that had been previously exposed to the Roentgen rays. He suggests that a hot bath thus sometimes might give useful information as to former local applications.

54. **The Chromogen Test.**—Pulay applied the diazo test and Weiss' potassium permanganate urochromogen test to 125 healthy persons and eighty-five with typhoid, seven with tuberculosis and six with pneumonia. There was no reaction in the healthy with either test, nor in sixty-four who had been inoculated against typhoid, but the findings were positive and concordant with both tests in fifty-seven of the eighty-five typhoid patients and in five of the seven tuberculous. Strange to say, in the six pneumonia cases the diazo was constantly positive and the chromogen constantly negative.

61. **Relapsing Tetanus.**—Happel reports the case of a soldier who had tetanus after a severe shrapnel injury, but recovered. Three months afterward erysipelas developed from a small still unhealed part of the wound, and tetanus developed anew. This time it proved fatal. The first attack had been treated with large intradural doses of antitetanus serum but even this did not suffice to ward off the second attack.

Zeitschrift für Tuberkulose, Leipzig

July, XXIV, No. 3, pp. 161-240. Last indexed August 14, p. 656

62 *The War and Tuberculosis. E. Effler.
63 *Treatment of Tuberculosis in City Hospital. (Ergebnisse der Krankenhausbehandlung bei Lungentuberkulose.) C. Moewes.
64 Suggestions for Combating Tuberculosis in Belgium. A. Mayer.
65 Treatment of Tuberculous Soldiers. (Richtlinien der Kriegstuberkulosebehandlung.) C. Kraemer.
66 *Lactic Acid in Treatment of Incipient Tuberculosis. F. Jessen.

62. **The War and Tuberculosis.**—Effler relates that the hasty mobilization of the German army resulted in many tuberculous soldiers taking their places in the ranks and thus providing foci for infection of others. It has taken a long time to weed out the suspects and keep them under observation until their disease or health was established and suitable measures taken. No tuberculous soldier is discharged now until he has taken a thorough course of sanatorium treatment. Much of the confusion might have been avoided if the physicians with the troops had been informed of the pathologic antecedents of the men in their charge, and he insists that the public sanatoriums, hospitals, etc., at least, should record their cases in such a way that troop physicians can be posted as to the tuberculosis morbidity of the men in their charge. This cannot be done now without the patient's consent, but only when this restriction is removed and every case recorded, will a scientific campaign against tuberculosis be possible.

He declares that it is not enough to examine and treat the individual patient, which has hitherto been the standpoint of the physician in all ages. The physician should look on the individual tuberculous patient as one symptom of a disease affecting the whole body of the people. It is a fine thing to cure a case of surgical tuberculosis, but the family and environment of the patient should be taken into account too. The profession must enlarge its sphere of responsibility, and it must not be allowed to happen any more that men with "open" tuberculosis are dismissed from hospitals to return to their family or troop and endanger others. It should not be allowed to happen that they drift away without the tuberculosis dispensaries being notified to look after them and protect the families. The profession must learn to appreciate the fact that tuberculosis is not an individual but a folk disease. The authorities should spare no expense to impress this fact on the profession and enable physicians to act on it. Free postgraduate courses should be provided to train physicians in this form of social medicine, the state realizing that it is the one to gain by this, and should bear the expense of it and of increased numbers of antituberculosis dispensaries. Physicians, on their part, must be leaders in educating the public. What can the most zealous physician hope to accomplish in a tuberculous family when the family do not comprehend the necessity and the reasons for the measures advised? These measures usually come too late besides; the children are the ones to teach and train, commencing in the school. In conclusion he urges the necessity for financial aid when needed by a tuberculous family. Constructive assistance at the right time may transform a family of almstakers into tax-paying citizens. Housing conditions are an important factor, and he declares that the state must intervene here too. The conditions brought by the war have changed things so that progress along all these lines seems feasible.

63. **Pulmonary Tuberculosis in City Public Hospital.**—Moewes analyzes the experiences with 1,000 patients with pulmonary tuberculosis at the Stubenrauch Hospital at Berlin. About 44 per cent. were in the third stage of the disease; 50 per cent. were improved; 33.3 per cent. died. Nine tables are given showing the outcome of various methods of treatment. The experiences with artificial pneumothorax (15 cases) were quite favorable, especially as a symptomatic measure and in pleurisy with effusion. The results of tuberculin treatment were also surprisingly good, considering the class of cases that come to a city hospital; 9 patients in the first stage were cured and 10 improved; 7 in the second stage were cured and 55 improved and 21 were improved of the 29 in the third stage, while 6 died and 2 did not seem to be benefited. These figures are equivalent to 14.5 per cent. cured, and 78.2 per cent. improved out of 110 given tuberculin treatment. In 29 of the cases the patients had fever and in 21 the fever subsided abruptly soon after the tuberculin was commenced.

66. **Destruction of Tubercle Bacilli by Lactic Acid.**—Jessen reports "brilliant" results in treatment of tuberculosis in the early stages with intravenous injections of a 1 per cent. solution of lactic acid, repeated once a month or once or twice a week. Cultures of tubercle bacilli are killed off promptly with dilute lactic acid, but it can act in the body only when in direct contact with the bacilli and hence has to be injected directly into the blood. The cases thus treated were those in which only the expert would have recognized tuberculosis, others seeing in them merely neurasthenia, poverty of the blood, stomach trouble, especially hyperacidity, or dysmenorrhea. Glandular tuberculosis also proved amenable to the lactic acid, but it is not adapted for treatment of advanced tuberculosis because the bacilli are liable to be ensconced in inaccessible quarters, and the destruction of large numbers of bacilli would release dangerous amounts of bacterial endolysins.

Grèce Médicale, Athens

May 1-15, XVII, Nos. 9-10, pp. 17-20

67 *Albuminuria Not Constant with Meningeal Hemorrhage. E. Macris.

67. **Albuminuria Not Constant with Meningeal Hemorrhage.** Macris reports a case of severe meningeal hemorrhage with left hemiplegia and epileptiform convulsions terminating fatally. There was slight albuminuria, with tube casts, evidently the result of some mild kidney trouble. The patient was a woman of 35, alcoholic, and necropsy revealed the large clot of blood on the motor zone of the right hemisphere. In a second case a man of 38 was beaten by bandits and suffered afterward from retrograde amnesia and agraphia until the accumulation of blood on the brain was removed through a trephining operation. The urine was examined for albumin repeatedly but there was no trace of albumin at any time. These two cases thus disprove the assertions of Guillain and Vincent that meningeal hemorrhage entails massive albuminuria reaching its height in twenty-four or forty-eight hours

and then disappearing completely. They called attention to this in 1909 and about eighteen cases have been reported since in France sustaining their statement, but Macris' experience has been the reverse.

Gazzetta degli Ospedali e delle Cliniche, Milan

July 3, XXXVI, No. 54, pp. 833-848

68 Elimination of Indol by the Skin and Urine. O. Cantelli.

Riforma Medica, Naples

July 31, XXXI, No. 31, pp. 841-868

69 Negative Results of Experimental Lesions of Vagus to Induce Gastric Ulceration. P. Fiori.

70 Vaccine Therapy of Tuberculosis in Children. U. Provinciali. Commenced in No. 30.

August 7, No. 32, pp. 869-896

71 *Stability of the Blood Corpuscles from Standpoint of Clinical Medicine. (Le resistenze globulari ed i poteri antiemolitici del sangue nella practica clinica.) A. Roccavilla. Commenced in No. 30.

71. **Stability of the Red Corpuscles and Antihemolysis Properties of the Blood.**—Roccavilla has been studying, on sixty-two patients with various diseases and minor ailments, the response of the blood corpuscles to different hemolytic agents, including the hypotonic sodium chlorid solution, saponin and serum from the blood of certain animals. He emphasizes that hemolysis may occur from a chemical reaction on the part of any one of the colloids in the corpuscles. Also that the quality and force of the resistance offered by the red corpuscles, and the quality and force of the protection afforded the corpuscle by the plasma must be taken into account in studying the blood. Test tube experiments do not reproduce all these factors, and consequently the findings in laboratory experiments do not apply unqualifiedly to clinical conditions. He gives the tabulated details of the results of his tests, showing that abnormal conditions in the blood can be classified by the responses to these simple tests, thus permitting estimation of the outcome.

Brazil Medico, Rio de Janeiro

July 8, XXIX, No. 26, pp. 201-208

72 Cure of Venereal Granuloma under Roentgen Exposures. H. C. de S. Araujo.

73 Immunity to and Prophylaxis of Tuberculosis. (Immunidad antituberculosa e prophylaxis social.) L. Freire. Commenced in No. 25.

July 15, No. 27, pp. 209-216

74 Mediastinum Syndrome from Metastasis of Abdominal Cancer. M. Rezende. Commenced in No. 25.

Russkiy Vrach, Petrograd

March 7, XIV, No. 10, pp. 217-240

75 Epilepsy and Pregnancy. S. A. Soukhanoff.

76 Vaccine Treatment of Gonorrheal Arthritis. N. P. Froloff. Commenced in No. 9.

77 Calculus Almost Filling the Kidney. B. Y. Susloff.

78 Treatment of the Wounded in Base Hospitals. A. A. Augspakh.

March 14, No. 11, pp. 241-264

79 The Mechanism of Root-Sciatica. M. N. Lapinsky.

80 Pain in the Neck and Scapulae in Relation to Disease in the Small Pelvis. M. N. Lapinsky.

81 *Bedbugs and Relapsing Fever. (Proiskodit-le peredacha vozvratnago tipha chrez klopoff?) V. K. Stephansky.

82 Metabolism of Heat. N. V. Vesselkin.

83 Active Immunization against Neoplasms. A. A. Krontovsky. Commenced in No. 10.

84 *The Spirochete of Syphilis and Its Cultivation. L. S. Shapiro.

March 21, No. 12, pp. 265-288

85 *Diagnosis of Chronic Appendicitis. K. M. Rutkevich.

86 Wolf-Junghans Reaction for Cancer of the Stomach. P. I. Lenskaia.

87 *The Composition of Saliva and the Salivary Reflexes. S. P. Lubimoff.

88 By-Effects of Neosalvarsan. M. A. Versilova.

89 *Skin Tuberculin Reaction in Infants. M. S. Voronin.

90 Cooperative Methods in the Treatment of Tuberculosis. S. T. Unterberger.

81. **Relapsing Fever Not Transmitted by Bedbugs.**—Stephansky infected old and young generations of bedbugs with blood from patients with relapsing fever, and examined them later for the presence of spirochetes. An hour after infection the spirochetes had lost their motility, and they had disappeared altogether after four or five hours. In another series of experiments ten grown bedbugs infected with relapsing-fever blood were killed and an emulsion made of them in normal salt solution. This was injected subcutaneously into monkeys, with negative results. Sixty-five infected bedbugs and their young were fed once a week on the blood of a perfectly healthy man who during two months was bitten by them at least 500 times, and remained unaffected. It is evident, therefore that bedbugs have no share in the spread of relapsing fever.

84. **The Spirocheta Pallida and Its Cultivation.**—Shapiro studied experimentally the modes of infection of rabbits with syphilis and the growth of spirochetes on horse serum. He comes to the conclusion that, contrary to the assertions of Ross, McDonagh and many others, the pale spirochete is a typical organism *sui generis*, the cause of syphilis, and not a transitional form of a plasmodium.

85. **Diagnosis of Chronic Appendicitis.**—Rutkevich says that chronic appendicitis frequently runs its course under the form of various gastric and intestinal disorders which are usually misinterpreted as some functional nervous disorder. During one year he encountered 76 cases of chronic appendicitis, all in women. In 60 an operation was done and 16 refused an operation. The disease usually occurred between the ages of 16 and 35, and in more than half of the cases it lasted two or three years. In 49 cases there was no history of previous attacks which, however, might have been overlooked if not very severe. Only 27 patients had a history of previous pain, usually in the right iliac region, radiating to the thigh, lumbar region, liver, etc. The pain was also located in some on the left side in the epigastric region, and in many cases was independent of the time of food taking. Constipation was present only in 31 cases. McBurney's point was tender in 21 of 50 operative cases, and in 22 it was found painless. The temperature was found normal in 28 of the 76 patients, and Rovsing's sign was negative in all. Leukocytosis was found but once (in 33 patients).

Therefore there are no pathognomonic signs of chronic appendicitis. The only reliable method of examination is by palpation. With this he could feel the appendix in 68 per cent. of cases, and in 88 per cent. it proved to be painful, and simultaneous pain was frequently noted at other points in the upper abdomen. Unfortunately the appendix cannot always be palpated.

Rutkevich recommends a new method of exploration by adduction of the cecum. The flexed fingers of the right hand are worked between the external wall of the cecum and the abdominal wall; then by extending the fingers the examiner tries to push the cecum toward the median line of the abdomen. In case of chronic appendicitis this will cause pain. In all of his cases (76) this sign was positive, and was confirmed by the operation. The pain can be explained by adhesions or by appendicitis. This sign in combination with palpation of the ileum (its sensitiveness or absence of pain) helps to differentiate appendicitis from diseases of the adnexa in the pelvis (salpingitis, oophoritis, etc.).

87. **Research on the Saliva.**—The viscosity of saliva depends on the quality of the food being taken. Lubimoff found that the saliva in dogs becomes less viscous if they are given, for instance, dry toast at five-minute intervals. If then the saliva is passed through a narrow glass tube, it will be found that the first portion requires fifteen seconds for its passage, the third, fourteen seconds, the last portion about twelve seconds. When given 10 c.c. hydrochloric acid (0.25 per cent. solution) every five minutes, collecting each time the saliva in test tubes, Lubimoff found that the viscosity of the saliva increased, and the secretion was more profuse. These and other tests showed that repeated frequent irritation of the salivary glands with food causes not only a diminution in the quantity of saliva, but also in its content of solid substances. Substances other than food had just the opposite results.

89. **Skin Tuberculin Test in Infants.**—Voronin applied the Pirquet test to 140 infants all 3 or 4 months old, except ten who were older (6 months to 1 year). The tuberculin was used in 5 per cent. up to 75 per cent. solutions. He found that the weak tuberculin solutions caused no reaction whatever in the infants, and that only 1.4 per cent. reacted to a very strong solution or to the undiluted tuberculin. As

children with a positive reaction usually die within the first year, the prognostic value of this reaction is evident.

Hospitalstidende, Copenhagen

July 28, LVIII, No. 30, pp. 733-768

91 Congenital Deformities of Fingers, and Their Pathogenesis. C. Otto. Commenced in No. 29.

92 The Development of the Thumb. (Om Tommelens Ontogenese.) E. Als.

August 4, No. 31, pp. 769-792

93 *Phototherapy of Pulmonary Tuberculosis. (Lysbehandling ved Lungetuberkulose.) V. Rubow and C. H. Würtzen. Commenced in No. 31.

94 *Syphilitic Parotitis. O. Haslund.

93. **Phototherapy of Pulmonary Tuberculosis.**—Rubow and Würtzen have been applying the arc light in treatment of advanced pulmonary tuberculosis at the Finsen institute, regarding it as a stimulant to the vital processes. They began it cautiously, exposing only part of the legs at first and gradually increasing until the whole trunk was exposed front, back and sides in turn. The details of sixteen cases are given and the results justify further trials of the measure. The fear that the exposures might do harm, bring on hemoptysis or fever, seems to be ungrounded. The patients were all in the third stage of pulmonary tuberculosis. The temperature, pulse and respiration did not show any modification from normal and the patients did not lose flesh from augmented metabolism. The râles subsided in some of the patients and disappeared completely in a few who had taken the longest course of treatment. All in all, they conclude, a trial on a larger scale is justified. They used two arc lights of 75 amperes (60 volts) each, and kept the dosage below the erythema dose as a rule. A few patients developed an erythema, as the arrangement of the room did not permit the patients to be at the distance from the light which is best at first. As they lacked the support of sanatorium treatment, being all outpatients of the Finsen Institute, the benefit realized was particularly significant.

94. **Syphilitic Parotitis.**—Although this is a very rare affection, Haslund remarks that its differentiation has great practical importance as preventing treatment on a mistaken basis, especially warding off operative measures. Gerber has compiled thirty-seven cases of a syphilitic affection of one or more of the salivary glands; the parotid gland was involved in twenty-eight of the cases. There seems to be no characteristic findings. In four of Gerber's thirty-seven cases the syphilis was inherited, and Haslund adds another case from his own practice to this group. This patient was a girl of 8 who, during the last three or four years, had been given systematic specific treatment. The parotitis developed during this treatment, under the physician's eyes, as it were. Haslund had a somewhat similar experience in another case, a nodule developing on the tongue while the man was taking a course of treatment. His infection dated from fourteen years previously. He had taken thirty-nine inunctions, and 102 gm. potassium iodid besides other measures. The nodule finally retrogressed completely. The hard lump in the parotid in Haslund's child patient did not retrogress under forty-nine inunctions and 39 gm. potassium iodid. The lump was then incised and drained, and it gradually subsided under local and continued general treatment. There are two cases recorded in Danish literature of possible syphilitic parotitis, which he summarizes. One developed acutely with fever, along with mastoid suppuration, and probably was not of exclusive syphilitic origin.

Hygiea, Stockholm

LXXVII, No. 13, pp. 705-768

95 *Chronic Thrombosis of Splenic and Portal Veins, Simulating Banti's Disease. (Till kännedomen om kronisk mjältven — och portatrombos, en Bantiliknande sjukdomsbild.) O. Lindbom.

95. **Chronic Thrombosis of Splenic and Portal Veins.**—Lindbom's patient was a woman of 56 with two healthy daughters; three other children had died in childhood. At 40 the spleen enlarged, and at 46 she began to vomit blood at times. After five years of this, Banti's disease was supposed to be responsible for the clinical picture, especially as ascites developed four years later requiring frequent tapping. The liver findings were normal but the blood showed anemia with low color index and large numbers of nucleated reds, resembling the blood picture after splenectomy. The trouble proved to be the result of syphilitic changes in the vessel walls entailing thrombosis of the splenic vein. There is no doubt, Lindbom declares, that many cases have been diagnosed Banti's disease that were really of this type of chronic thrombosis of the splenic vein. The portal vein becoming involved likewise brings ascites in time. The special features which differentiate the condition from Banti's disease are the advanced age, the protracted, long stationary course, and the relative lymphopeny. Splenectomy is peculiarly risky in such cases and the effects uncertain, as the source of the trouble is not in the spleen but in the splenic and portal veins. The Wassermann reaction was constantly negative but he suspected the syphilitic nature of the trouble from a perforation found in the septum, a history of optic neuritis twenty-one years before, ascribed to an assumed brain tumor at the time, and the fact that the temperature fluctuated under potassium iodid. An intercurrent erysipelas hastened the fatal outcome.

Norsk Magazin for Lægevidenskaben, Christiania

August, LXXVI, No. 8, pp. 985-1072

96 Grape Sugar in the Urine. (Om paavisning av smaa mængder druesukker i urinen.) H. C. Geelmuyden.

97 *Rupture of Kidney; Two Cases. (Ruptura renis.) N. Barth.

98 Rupture of Intestine in Hernia, without Incarceration. (Tarmruptur ved brok.) N. B. Grøndahl.

99 *Acute Glaucoma Developing After Instillation of Holocain or Zinc Sulphate. (Kan et akut glaukomanfald utløses ved holokain-zinkinddrypning.) H. Gjessing.

97. **Rupture of the Kidney.**—In both of Barth's cases the accident rupturing the kidney did not cause much disturbance otherwise. Comparing them with those on record shows that considerable and protracted hemorrhage testifies to a severe lesion of the kidney but that the organ may also be seriously injured even when there is but little blood in the urine, as the blood may be accumulating outside. The severe hematuria in his first case testified to the necessity for prompt operative treatment, and recovery soon followed nephrectomy. The kidney had been torn entirely across; the halves were held together only by the hilus. The abdomen was tender and a tumefaction, increasing in size, could be felt in the kidney region. In the second case the only sign was blood-stained urine after the contusion of the kidney region. The patient was kept in bed on a milk diet and given gelatin. By the ninth day the urine was normal, and he was discharged as cured. After injury of a kidney, the patient should be under constant medical oversight for the first week. If there are signs of injury of the bowel, a prompt operation is the only salvation. The pulse, the temperature, tumefaction and tenderness should be watched from day to day, and it should not be forgotten that hematuria may be a symptom of rupture of the ureter or bladder.

99. **Acute Attack of Glaucoma Following Instillation of Holocain and Zinc.**—Gjessing discusses further a case he published in 1914 of acute glaucoma following at once an instillation of 1 per cent. zinc sulphate, preceded by a local anesthetic (2 per cent. holocain hydrochlorid). Gjessing's second patient was a man of 79 subject to acute attacks of glaucoma of the type known as glaucoma with intermittent hemostasis. The tension in the eye had been 53 mm. of mercury. The two cases teach the necessity for instilling a myotic at once after tonometry if the tension is in the neighborhood of 50 mm. Both holocain and zinc cause transient hyperemia in the conjunctiva. Plastinin of Moscow has reported a similar case under holocain alone.

Ugeskrift for Læger, Copenhagen

July 29, LXXVII, No. 30, pp. 1225-1256

100 Regional Morbidity in Denmark, 1890 to 1909. (Sygeligheden i By og paa Land i Danmark i de 2 Tiarr 1890-1909.) P. Heiberg.

101 Acids and Base-Forming Elements in Foods. (Vore Næringsmidlers Saltindhold. Syrer og Baser.) M. Hindhede.

August 5, No. 31, pp. 1257-1306

102 Variability of Duration of Pregnancy. (Om Svangerskabstiden og dens Svingninger.) V. Ellermann.